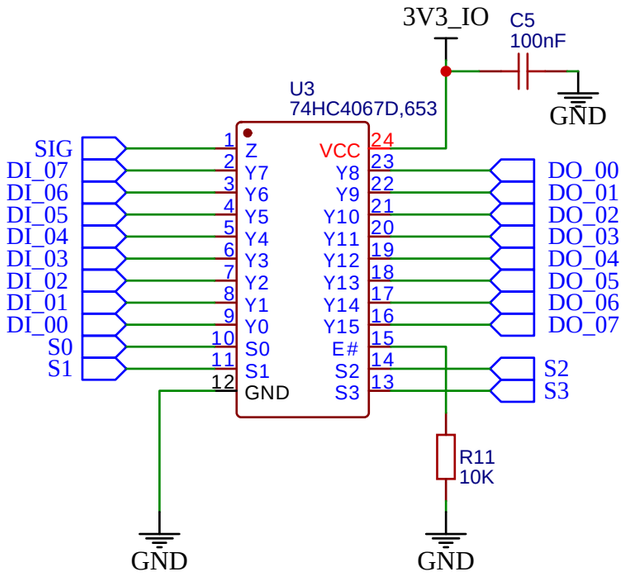
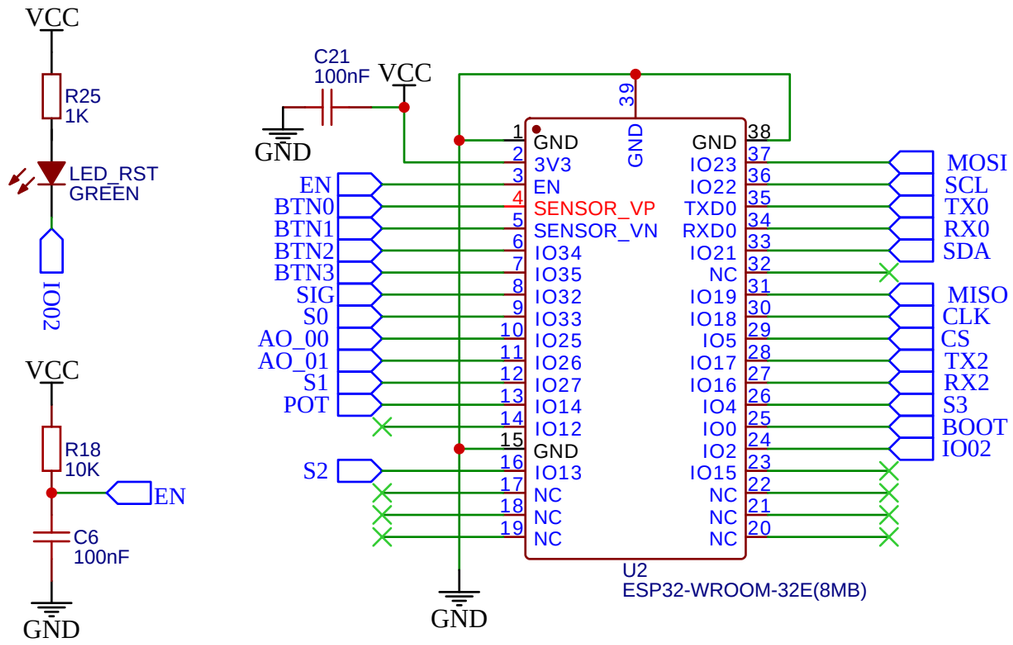
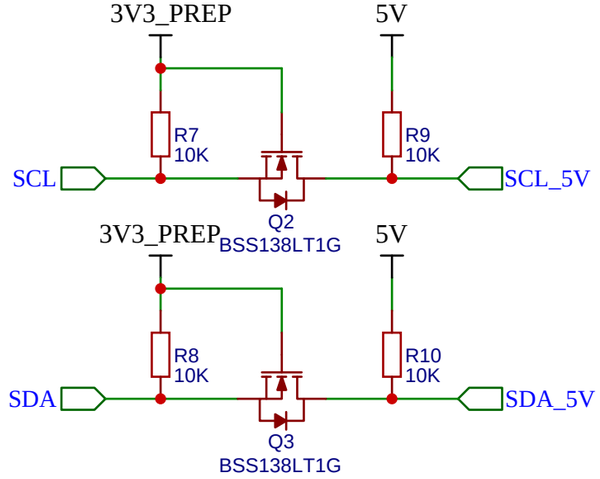
Multiplexer - Digital Input & Output



MICROCONTROLLER

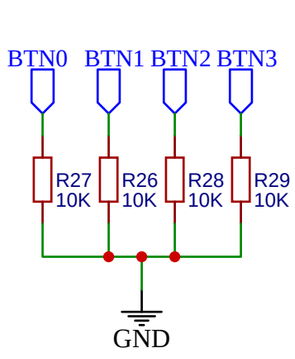


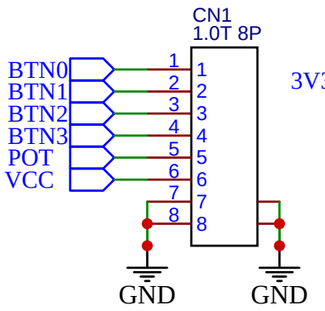
Logic Level Converter - I2C External



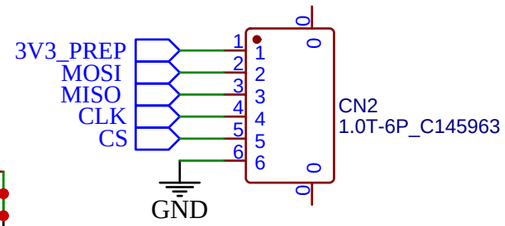
HUMAN INTERFACE CONNECTOR

BUTTON AND ROTARY CONNECTOR

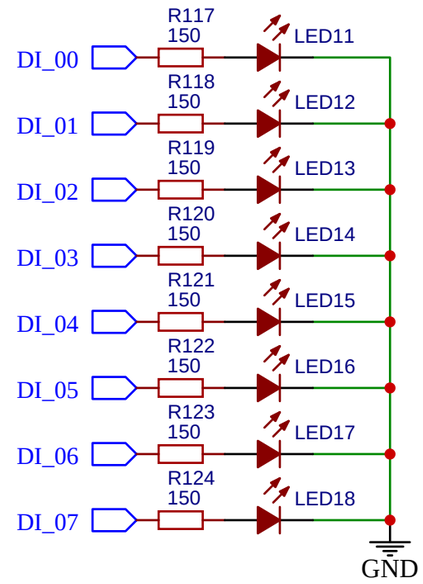




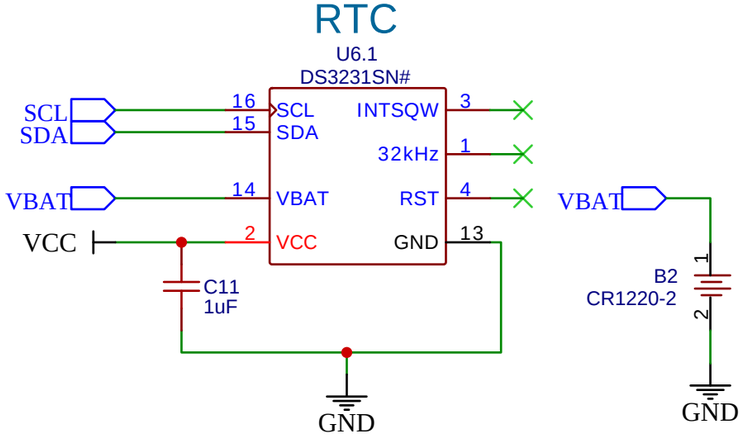
LCD CONNECTOR

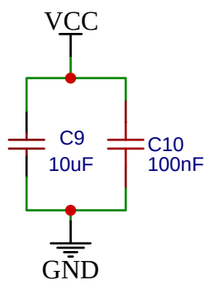


Digital Input Indicator



RTC

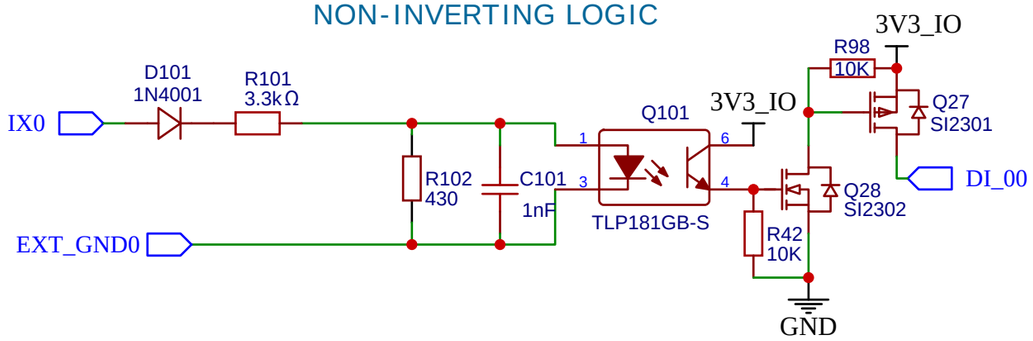


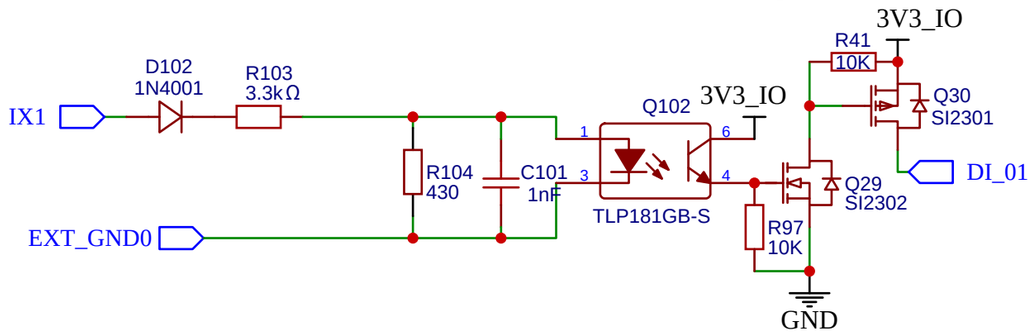


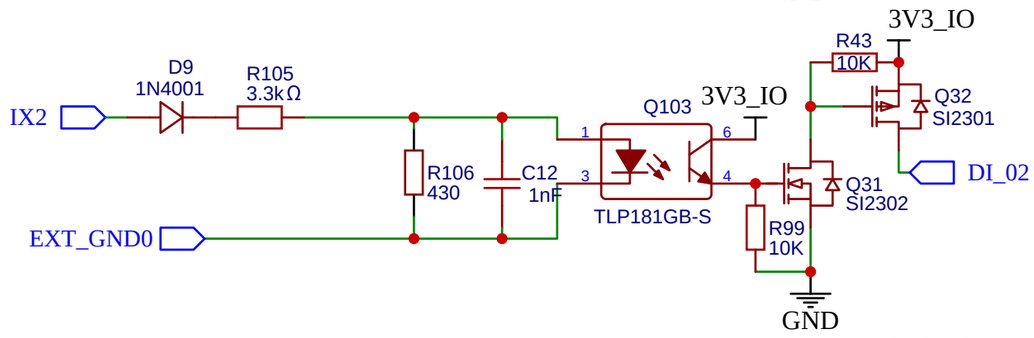
TITLE: ESP32+ OpenPLC (Main)		REV: 1.0
	Company:	Sheet: 1/7
	Date: 2022-06-02	Drawn By: Anwar Minarso

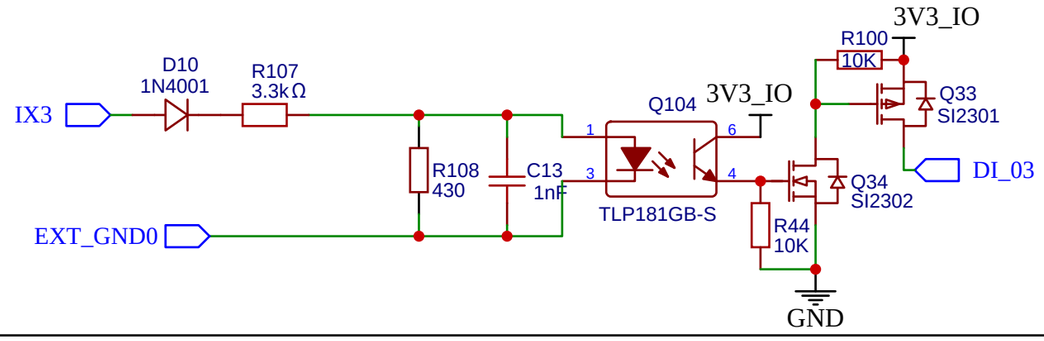
DIGITAL INPUT - ISOLATED 1

NON-INVERTING LOGIC



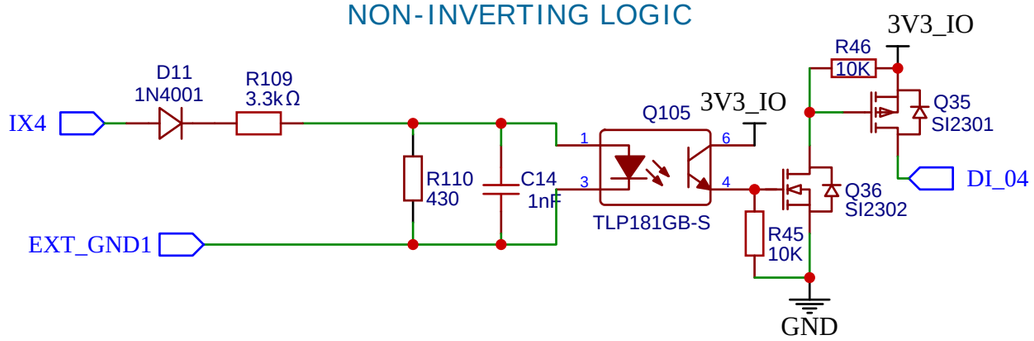


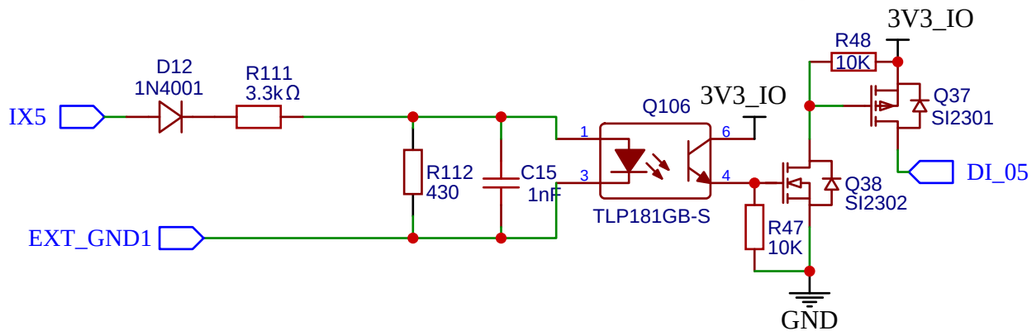


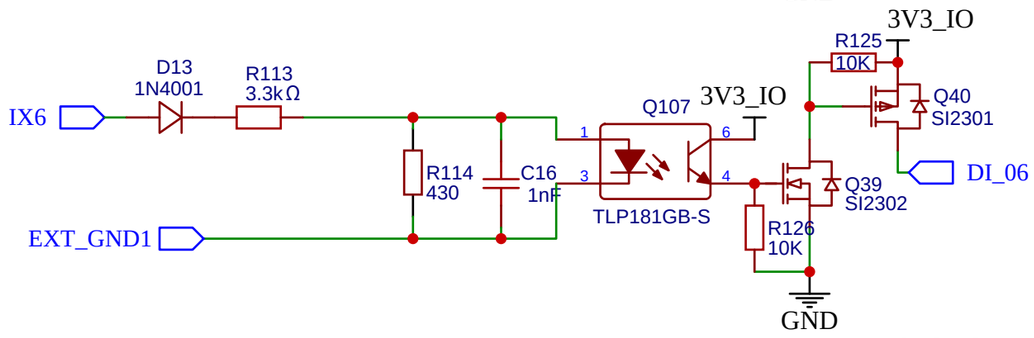


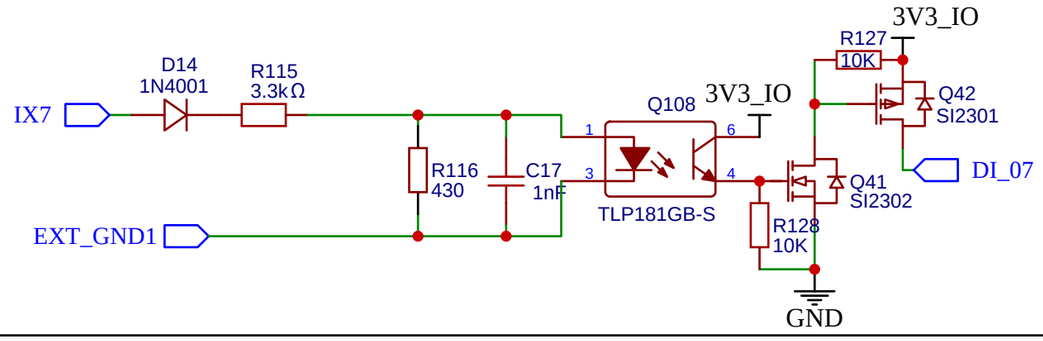
DIGITAL INPUT - ISOLATED 2

NON-INVERTING LOGIC









OpenPLC
IXn => Digital Input

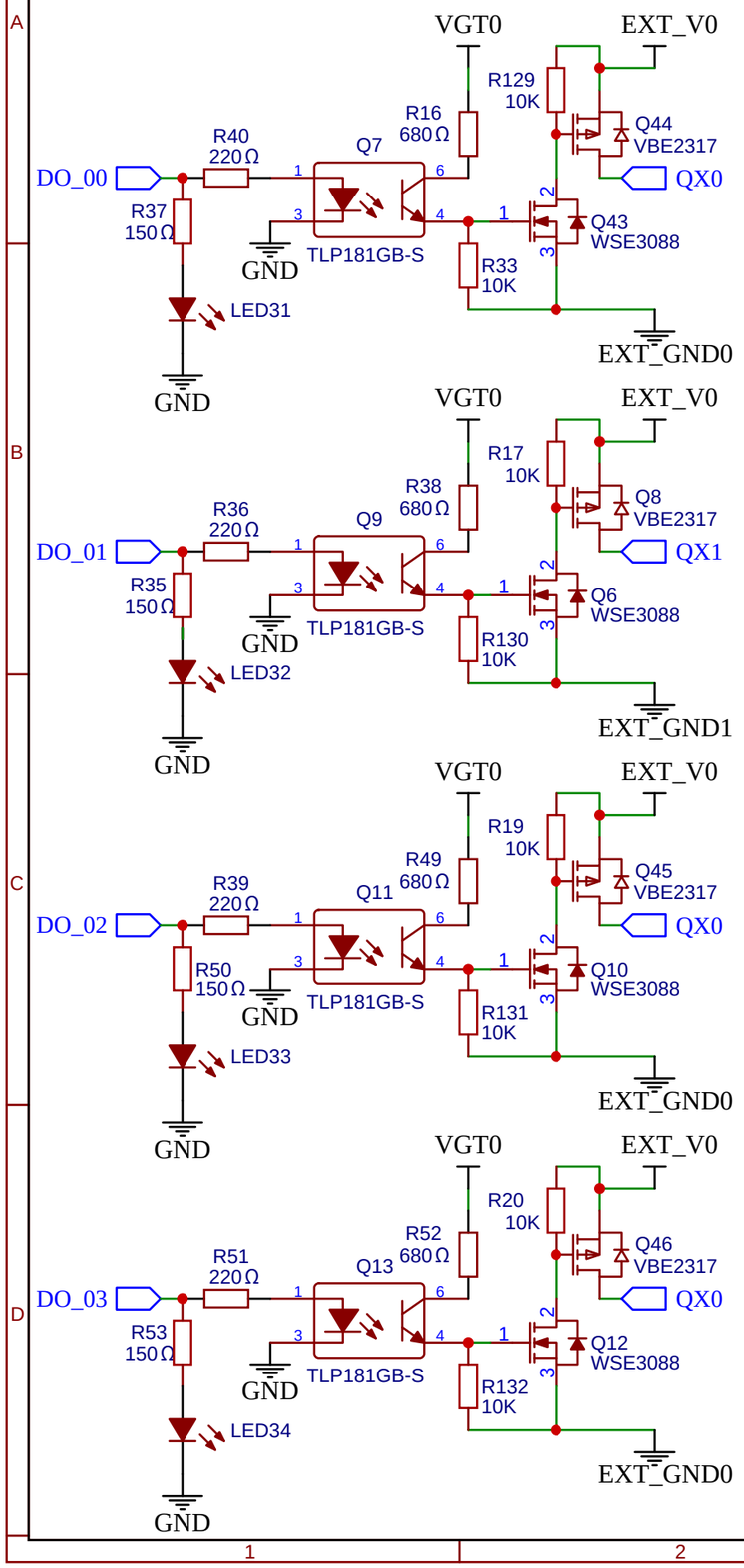
Isolated 1
IX0 = Digital Input Ch0 (0-24V)
IX1 = Digital Input Ch1 (0-24V)
IX2 = Digital Input Ch2 (0-24V)
IX3 = Digital Input Ch3 (0-24V)
EXT_GND0 = External Ground (Isolated 1)

Isolated 2
IX4 = Digital Input Ch4 (0-24V)
IX5 = Digital Input Ch5 (0-24V)
IX6 = Digital Input Ch6 (0-24V)
IX7 = Digital Input Ch7 (0-24V)
EXT_GND1 = External Ground (Isolated 2)

TITLE: ESP32+ OpenPLC (Digital Input)	REV: 1.0
Company:	Sheet: 2/7
Date: 2022-06-02 Drawn By: Anwar Minarso	

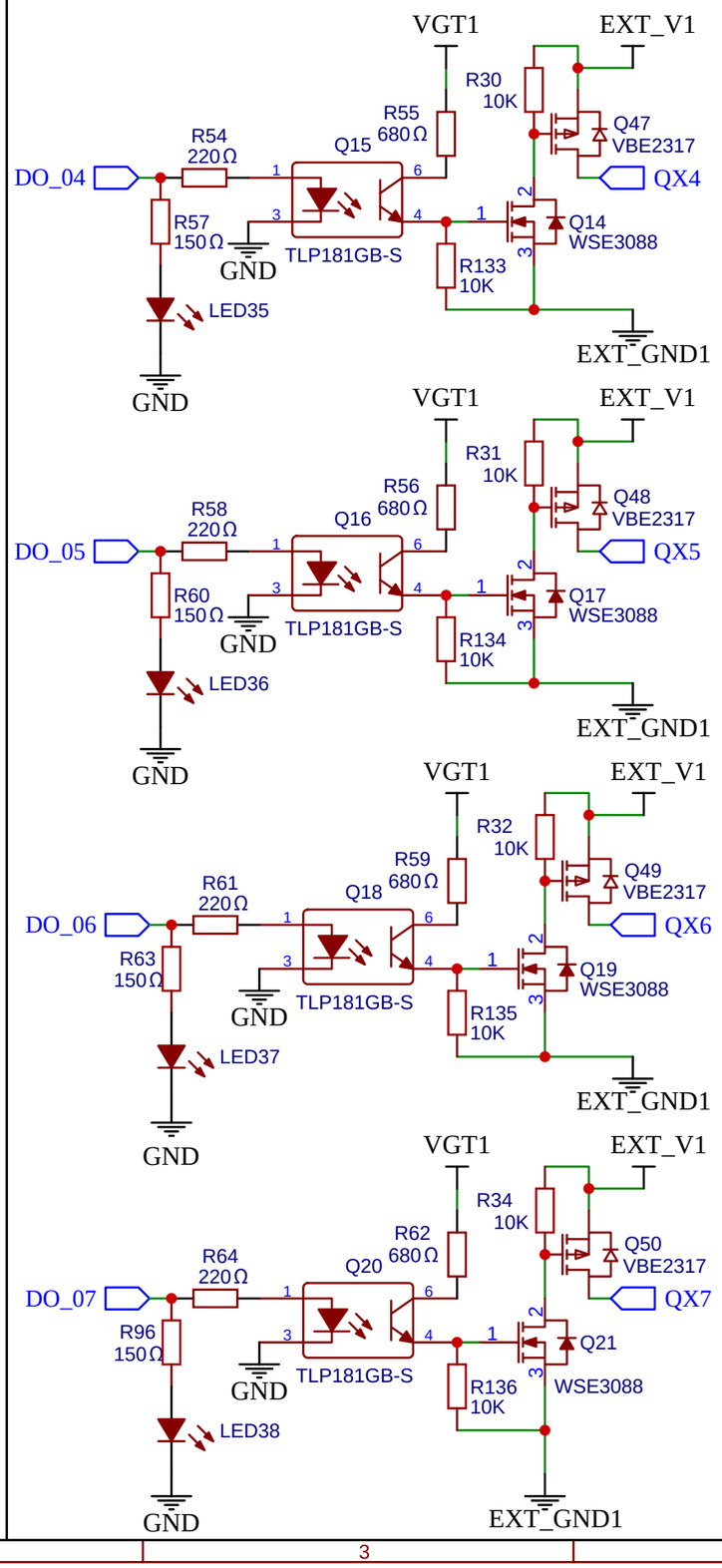
DIGITAL OUTPUT - ISOLATED 1

NON-INVERTING LOGIC

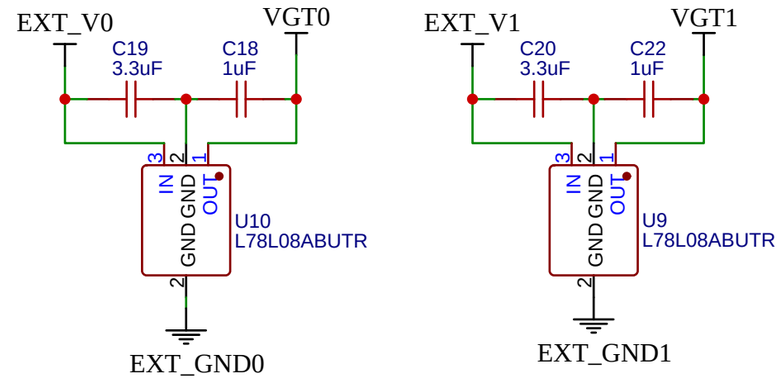


DIGITAL OUTPUT - ISOLATED 2

NON-INVERTING LOGIC



GATE LDO



OpenPLC
QXn => Digital Output

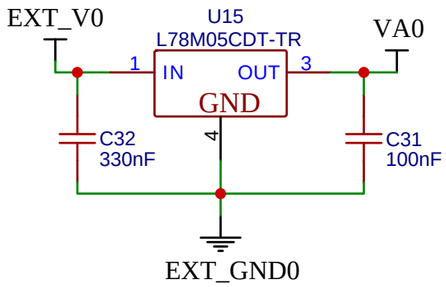
Isolated 1
QX0 = Digital Output Ch0
QX1 = Digital Output Ch1
QX2 = Digital Output Ch2
QX3 = Digital Output Ch3
EXT_GND0 = External Ground (Isolated 1)

Isolated 2
QX4 = Digital Output Ch4
QX5 = Digital Output Ch5
QX6 = Digital Output Ch6
QX7 = Digital Output Ch7
EXT_GND1 = External Ground (Isolated 2)

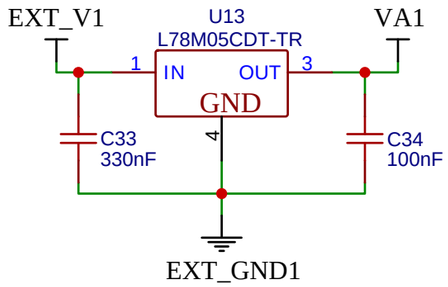
Max power 40W for all digital output

TITLE: ESP32+ OpenPLC (Digital Output)		REV: 1.0
	Company: a2ntech	Sheet: 3/7
	Date: 2022-06-02 Drawn By: Anwar Minarso	

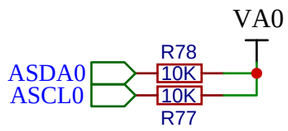
LDO 5V



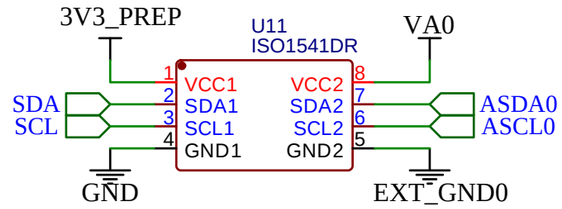
LDO 5V



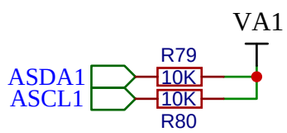
I2C PULL UP



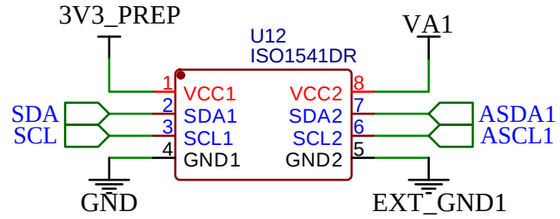
Isolated I2C



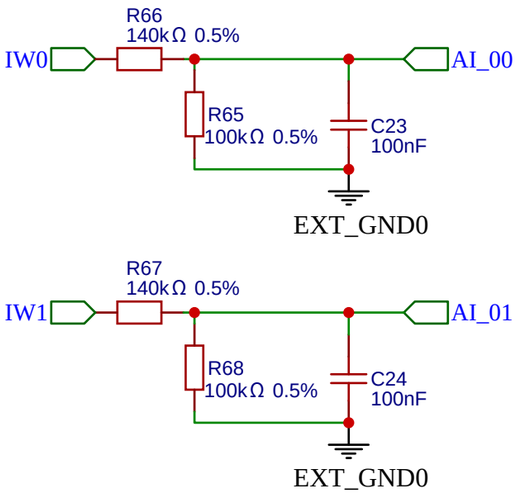
I2C PULL UP



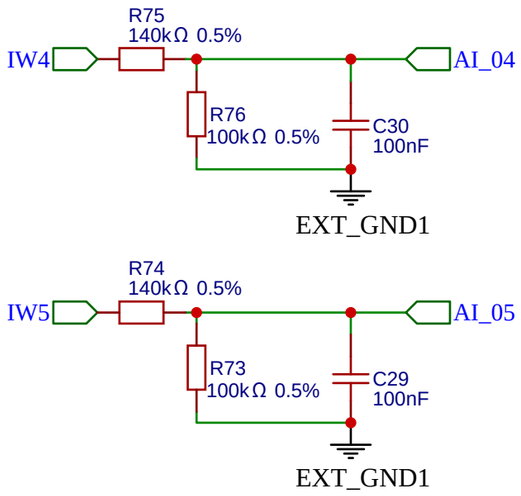
Isolated I2C



ANALOG INPUT 0-10V

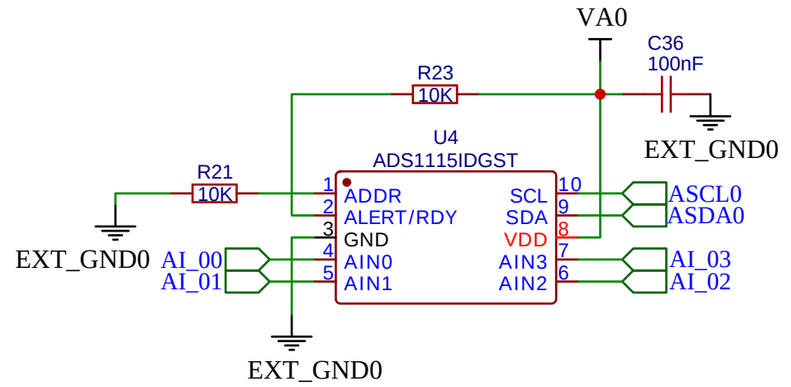


ANALOG INPUT 0-10V

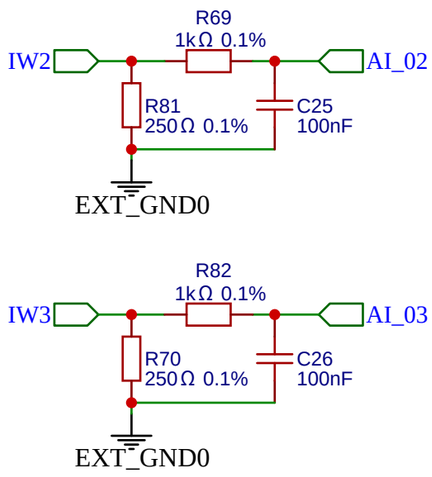


ADC 4CH 16BIT

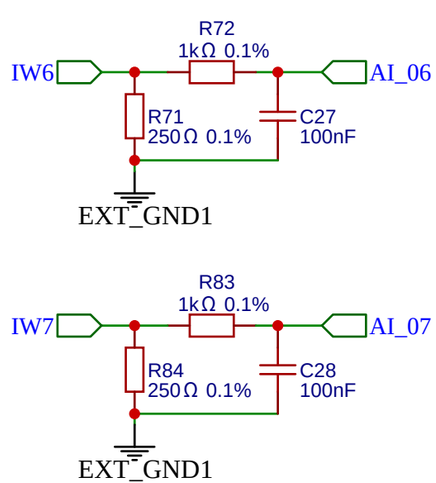
I2C address 0x48



ANALOG INPUT 0-20ma

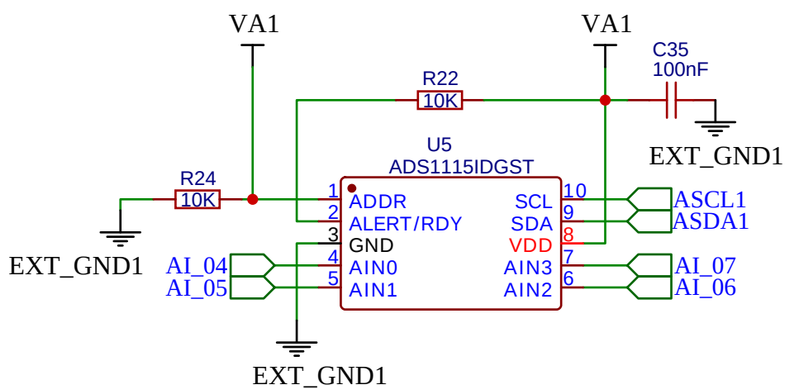


ANALOG INPUT 0-20ma



ADC 4CH 16BIT

I2C address 0x49



To MCU
VCC => MCU Power 3.3V/5V
GND => MCU Ground
SCL => MCU SCL
SDA => MCU SDA

OpenPLC
IWn => Analog Input

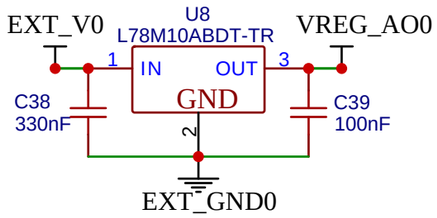
Isolated 1
EXT_V0 = External Power (10-30)V
EXT_GND0 = External Ground
IW0 = Analog Input Ch0 (0-10V)
IW1 = Analog Input Ch1 (0-10V)
IW2 = Analog Input Ch2 (0-20ma)
IW3 = Analog Input Ch3 (0-20ma)

Isolated 2
EXT_V1 = External Power (10-30)V
EXT_GND1 = External Ground
IW4 = Analog Input Ch4 (0-10V)
IW5 = Analog Input Ch5 (0-10V)
IW6 = Analog Input Ch6 (0-20ma)
IW7 = Analog Input Ch7 (0-20ma)

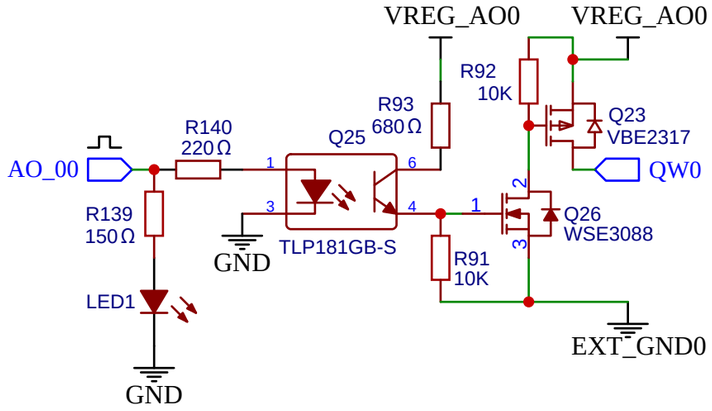
TITLE: ESP32+ OpenPLC (Analog Input)	REV: 1.0
Company:	Sheet: 4/7
Date: 2022-06-02 Drawn By: Anwar Minarso	

ANALOG OUTPUT 0-10V (ISOLATED 1)

LDO 10V

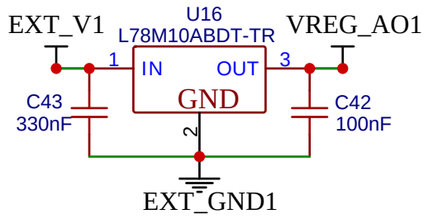


0-3.3V PWM to 0-10V PWM

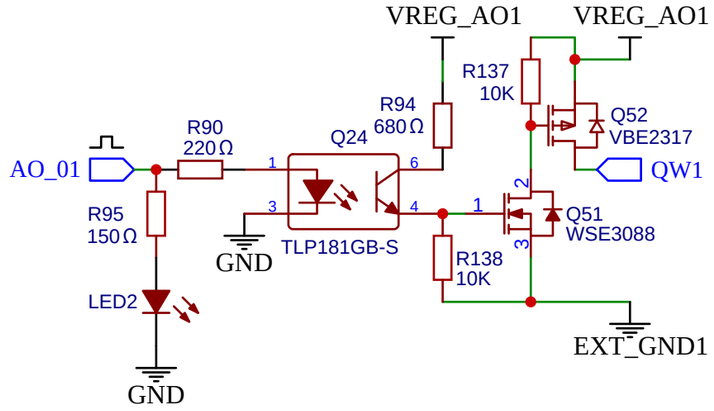


ANALOG OUTPUT 0-10V (ISOLATED 2)

LDO 10V

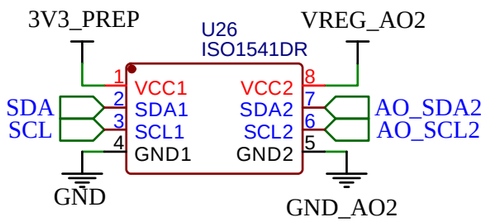


0-3.3V PWM to 0-10V PWM

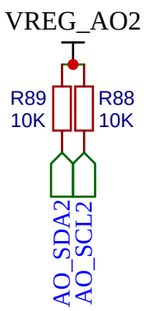


ANALOG OUTPUT 0-20ma (ISOLATED 3)

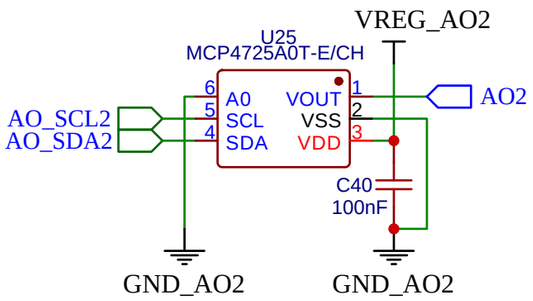
Isolated I2C



I2C Pull-up



DAC
I2C address 0x60

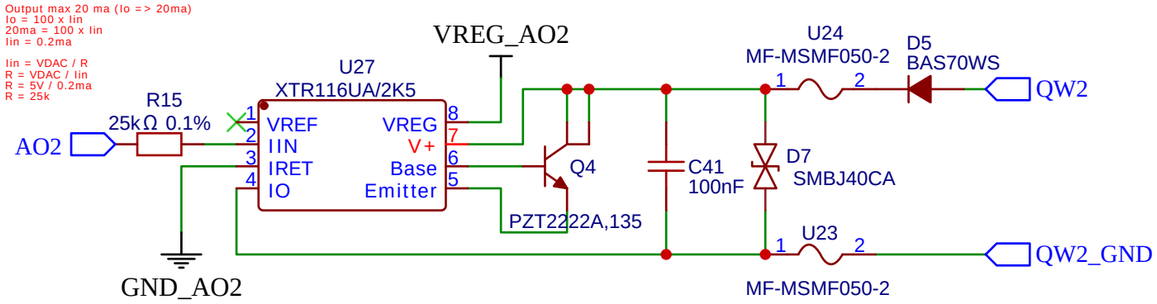


Datasheet Function
Io = 100 x Iin

DAC working voltage = 5V
DAC output max => 5V

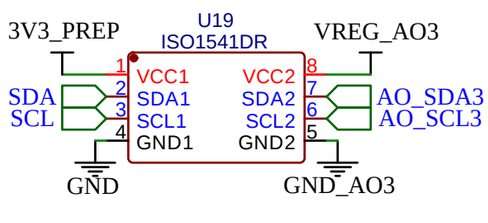
Output max 20 ma (Io => 20ma)
Io = 100 x Iin
20ma = 100 x Iin
Iin = 0.2ma

Iin = VDAC / R
R = VDAC / Iin
R = 5V / 0.2ma
R = 25k

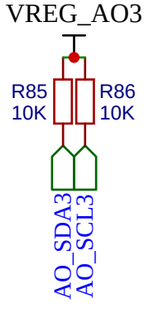


ANALOG OUTPUT 0-20ma (ISOLATED 4)

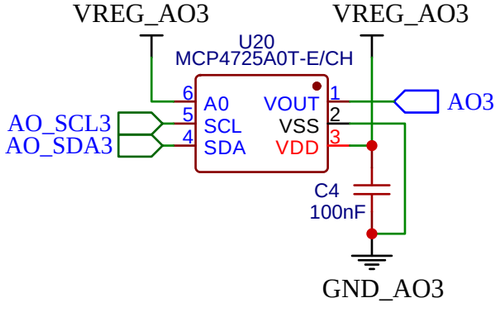
Isolated I2C



I2C Pull-up



DAC
I2C address 0x61

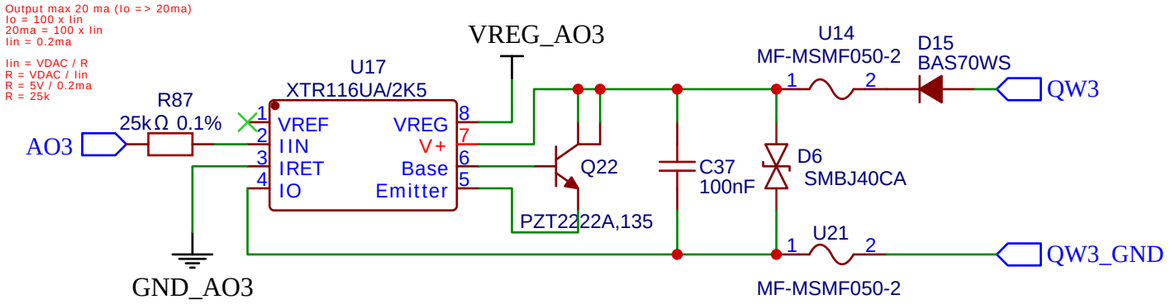


Datasheet Function
Io = 100 x Iin

DAC working voltage = 5V
DAC output max => 5V

Output max 20 ma (Io => 20ma)
Io = 100 x Iin
20ma = 100 x Iin
Iin = 0.2ma

Iin = VDAC / R
R = VDAC / Iin
R = 5V / 0.2ma
R = 25k



OpenPLC
QWn => Analog Output

Isolated 1
QW0 = Analog Output Ch0 (0-10V, Imax=500ma)

Isolated 2
QW1 = Analog Output Ch1 (0-10V, Imax=500ma)

Isolated 3
QW2 = Analog Output Ch2 (0-20ma)

Isolated 4
QW3 = Analog Output Ch3 (0-20ma)

TITLE: ESP32+ OpenPLC (Analog Output)

REV: 1.0

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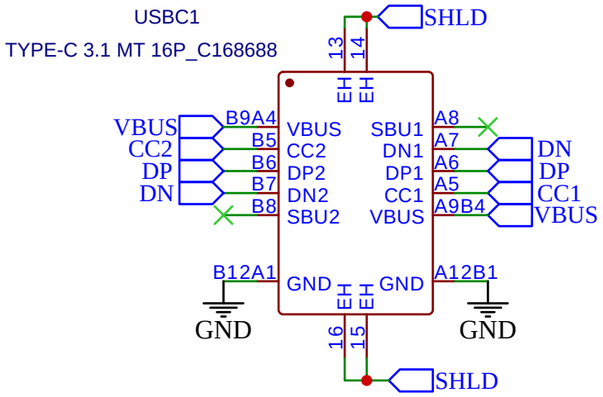
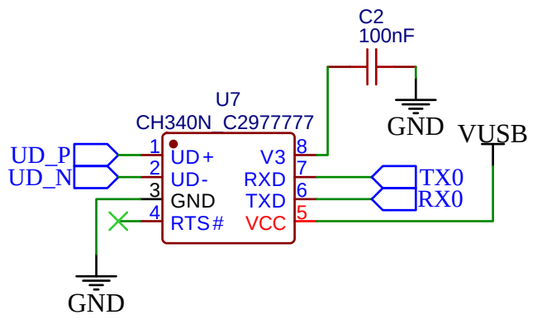
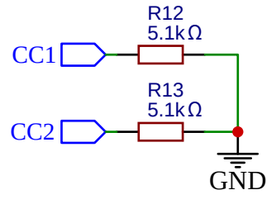
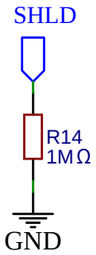
Date: 2022-06-02 Drawn By: Anwar Minarso

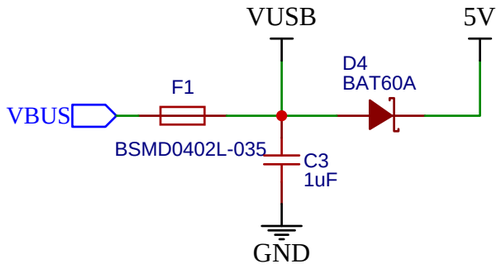
USB SERIAL

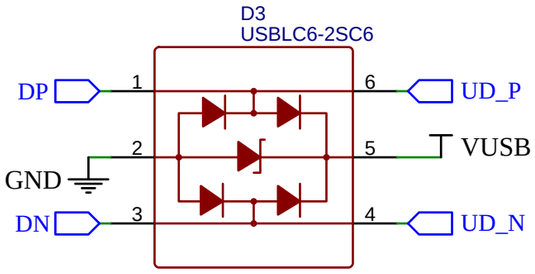




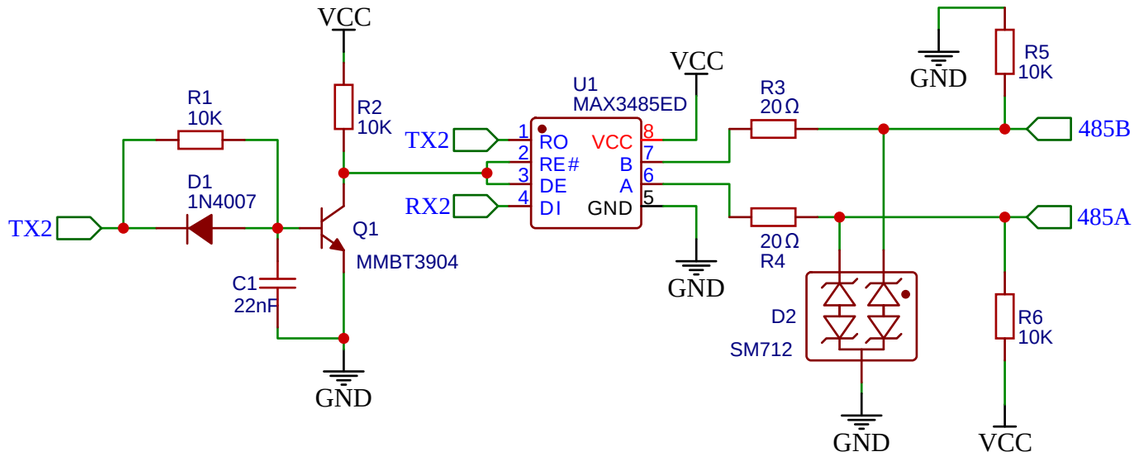






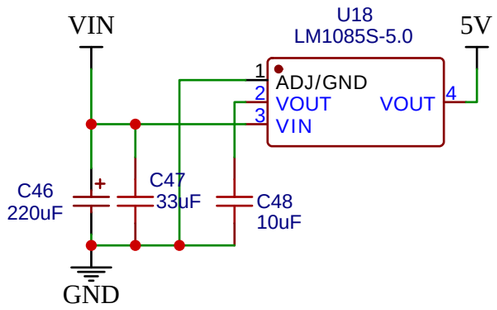


MODBUS RTU (RS-485)

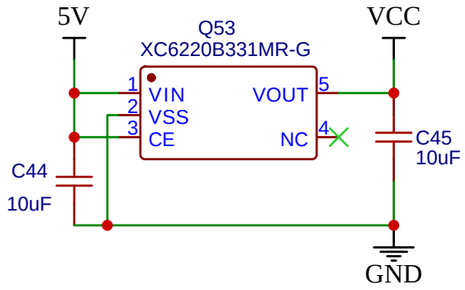


TITLE: ESP32+ OpenPLC (Communication)		REV: 1.0
	Company:	Sheet: 6/7
	Date: 2022-06-02	Drawn By: Anwar Minarso

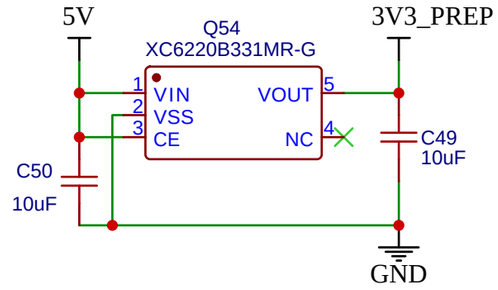
MAIN LDO 5V, 3A



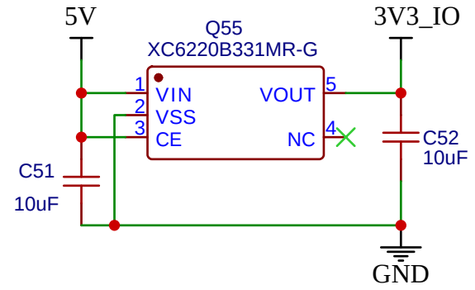
MCU LDO 3.3V, 1A



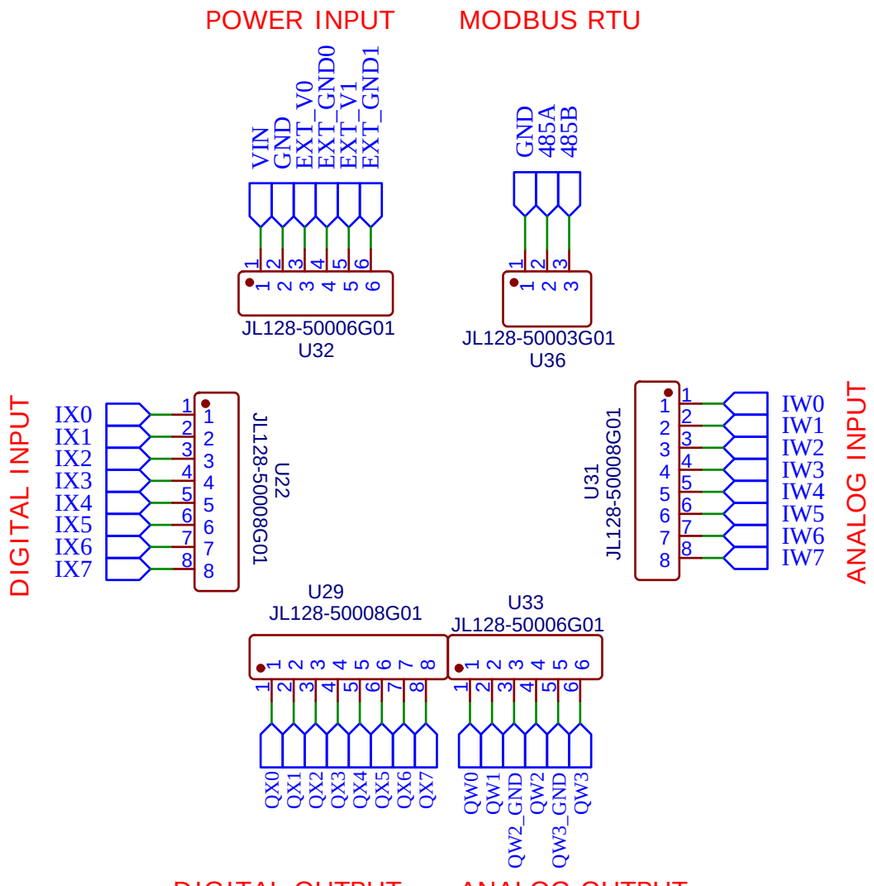
PERIPHERAL LDO 3.3V, 1A



I/O LDO 3.3V, 1A



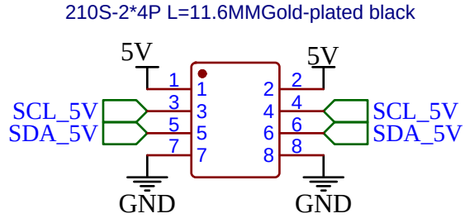
PINOUT



I2C EXTENSION

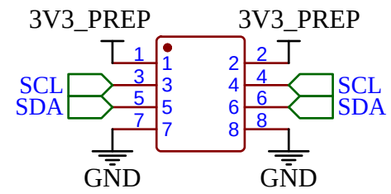
I2C 5V

H2
210S-2*4P L=11.6MMGold-plated black



I2C 3.3V

H1
210S-2*4P L=11.6MMGold-plated black



ESP32+ OpenPLC

2x port Extension I2C (3.3V)
2x port Extension I2C (5V)
1x port RS-485 (Modbus RTU)
1x port SPI untuk LCD/TFT
4x button untuk Human Interface
1x Rotary Encoder untuk Human Interface
Modbus TCP (via WiFi)
Modbus RTU (via RS-485 atau via Bluetooth)

I/O 28 Channel dengan 4 group terisolasi

Isolated 1
4x Digital Input (0-24V)
4x Digital Output (Pmax = 40W/Ch)
2x Analog Input (0-10V)
2x Analog Input (0-20ma)
1x Analog Output (0-10V)

Isolated 2
4x Digital Input (0-24V)
4x Digital Output (Pmax = 40W/Ch)
2x Analog Input (0-10V)
2x Analog Input (0-20ma)
1x Analog Output (0-10V)

Isolated 3
1x Analog Output (0-20ma)

Isolated 4
1x Analog Output (0-20ma)

TITLE: ESP32+ OpenPLC (Regulator and Pinout)		REV: 1.0
	Company:	Sheet: 7/7
	Date: 2022-06-02	Drawn By: Anwar Minarso