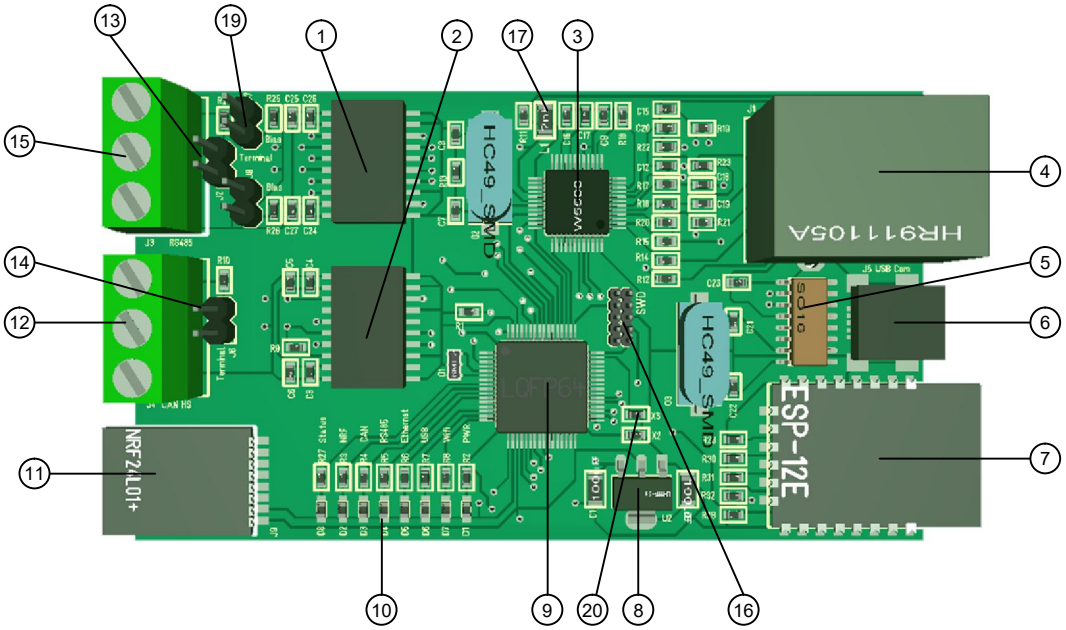
Communication Adapter
Annotated Schematics

Revision 1.2 - 2.Aug.2017

Introduction

This document contains the annotated schematics for the communication adapter 1.2. The document is intended for developers needing to work with the firmware.

3D Model

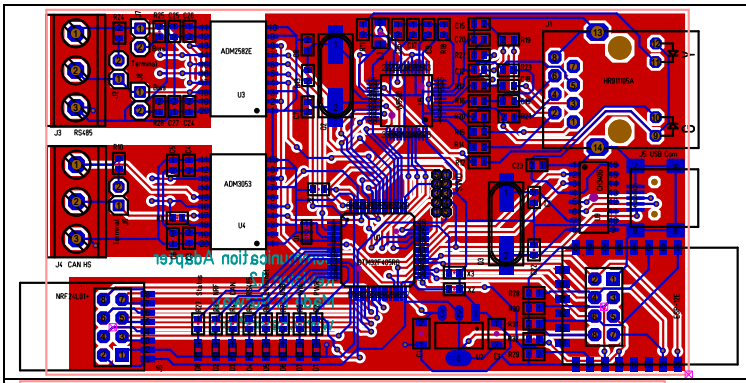
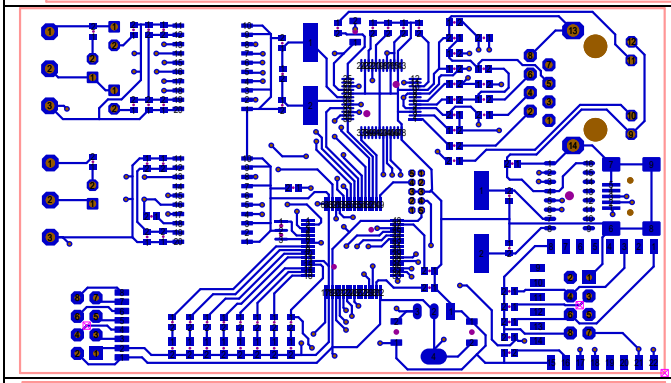
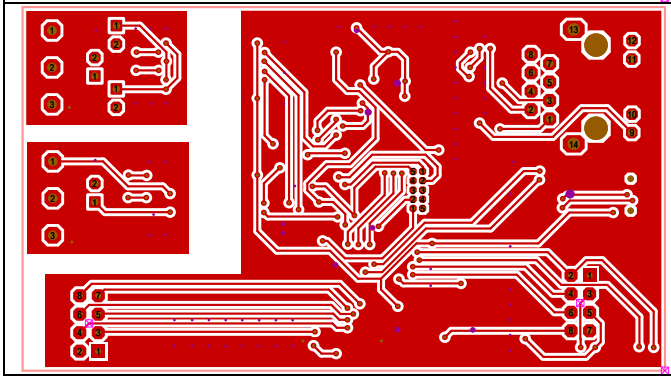


1	ADM2582E RS485 Transceiver.
2	ADM3053 CAN HS Transceiver.
3	W5500 Ethernet Interface
4	RJ45 Ethernet connector
5	CH340G Serial/USB
6	Mini USB connector
7	ESP-12E or ESP-01
8	LM1117-3.3 3.3V regulator
9	STM32F405RG. Can be replaced with STM32F105RB if VCAP is replaced with 0R.
10	Status Led's
11	NRF24L01+ module
12	CAN connector
13	RS485 120 Ohm terminator jumper
14	CAN 120Ohm terminator jumper
15	RS485 connector
16	SWD connector

17	L1 Coil. Need to be shorted for Ethernet and CH340G to work. See Notes.
18	na
19	RS485 Bias Jumpers
20	VCAP's for STM32F405RG. These must be replaced with 0R for STM32F105RB.

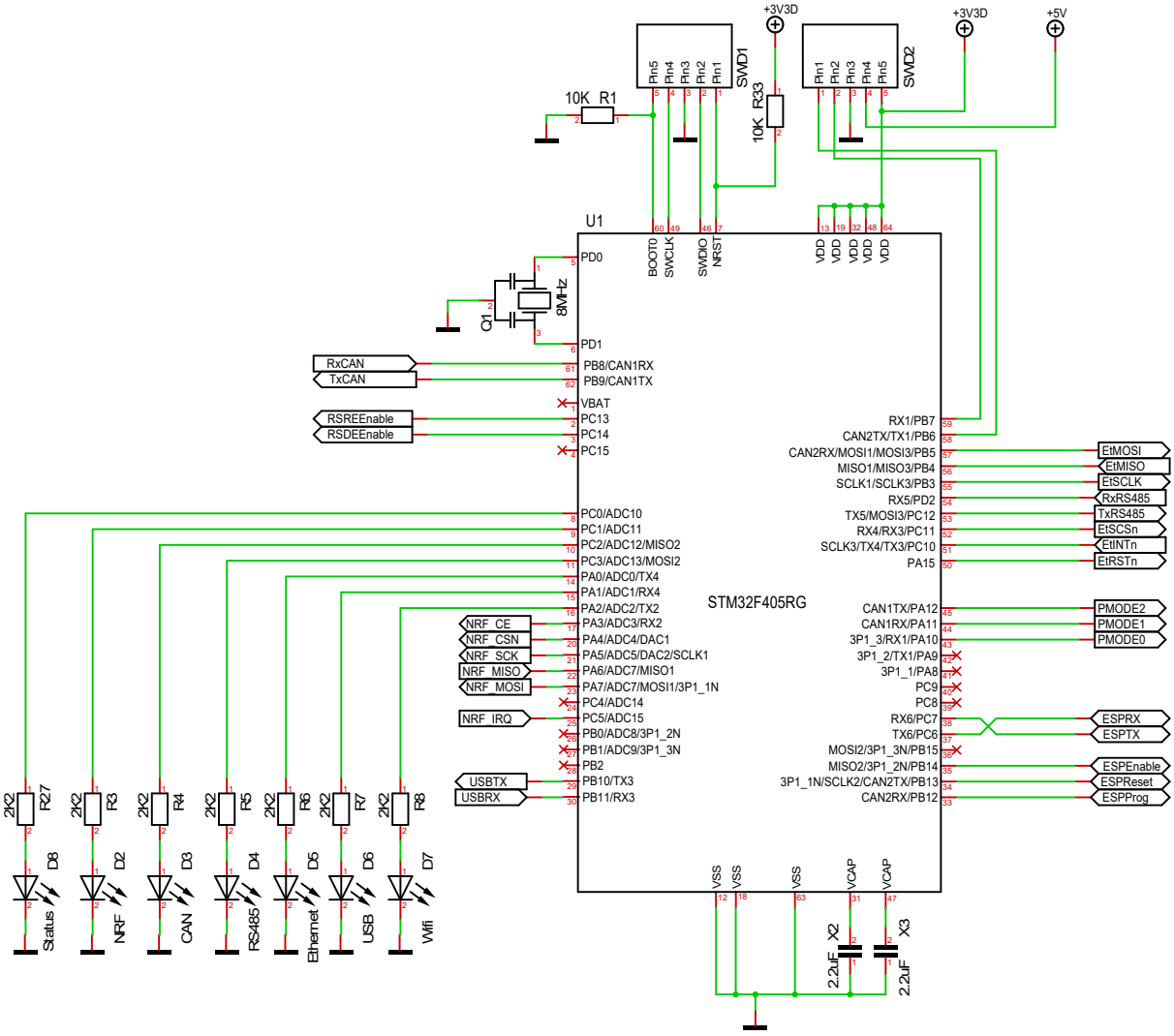
Block Diagram

PCB

	All layers
	Top layer
	Bottom layer

Connector pin-outs

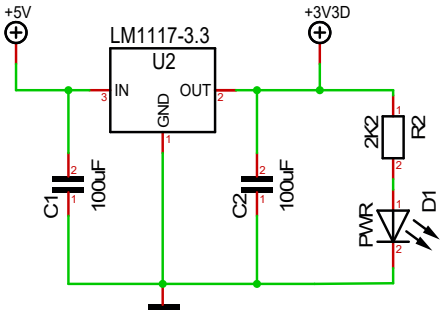
MCU Schematics



Function	Pin	Port	Description
HSE	5,6	PD0, PD1	8Mhz Crystal
RS485	2,3,53,54	PC13,PC14,PC12,PD2, UART5	RS485 with separate RE og DE on UART5.
NRF24L01+	17	PA3	CE
	20	PA4	CSN
	21	PA5 - SPI1 SCLK	SPI1 Clock
	22	PA6 - SPI1 MISO	SPI1 MISO
	23	PA7 - SPI1 MOSI	SPI1 MOSI
	25	PC5	IRQ
LED	8	PC0	MCU Status
	9	PC1	NRF Status
	10	PC2	CAN Status
	11	PC3	RS485 Status
	14	PA0	Ethernet Status
	15	PA1	USB Status
	16	PA2	Wifi Status
USB Serial	29	PB10 - UART3	TX

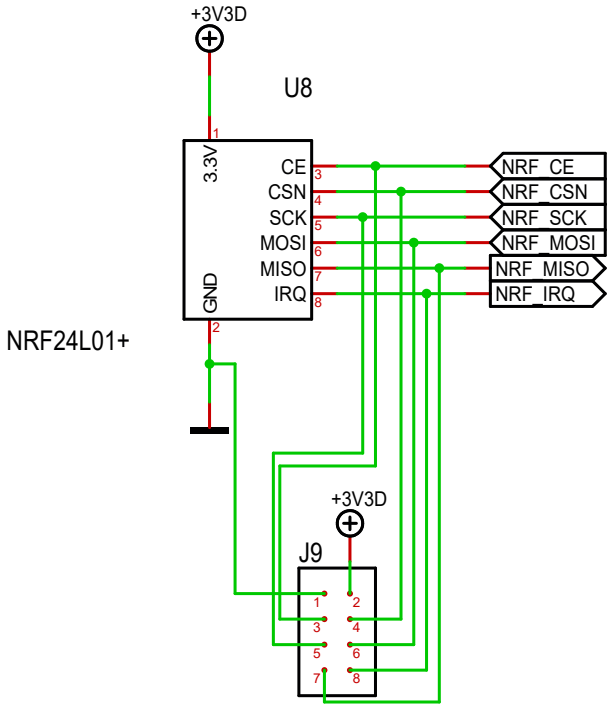
	30	PB11 - UART3	RX
Wifi	33	PB12	Prog
	34	PB13	Reset
	35	PB14	Enable
	37	PC6 - USART6	TX
	38	PC7 - USART6	RX
Ethernet	43	PA10	PMode0
	44	PA11	PMode1
	45	PA12	PMode2
	50	PA15	EReset
	51	PC10	Int
	52	PC11	SCS
	55	PB3 - SPI1 SCLK	SPI1 Clock
	56	PB4 - SPI1 MISO	SPI1 MISO
	57	PB5 - SPI1 MOSI	SPI1 MOSI
SWD	58	PB6 - USART2	TX
	59	PB7 - USART1	RX
	7	NRST	
	46	SWDIO	
	49	SWCLK	
	60	BOOT0	

PSU Schematics



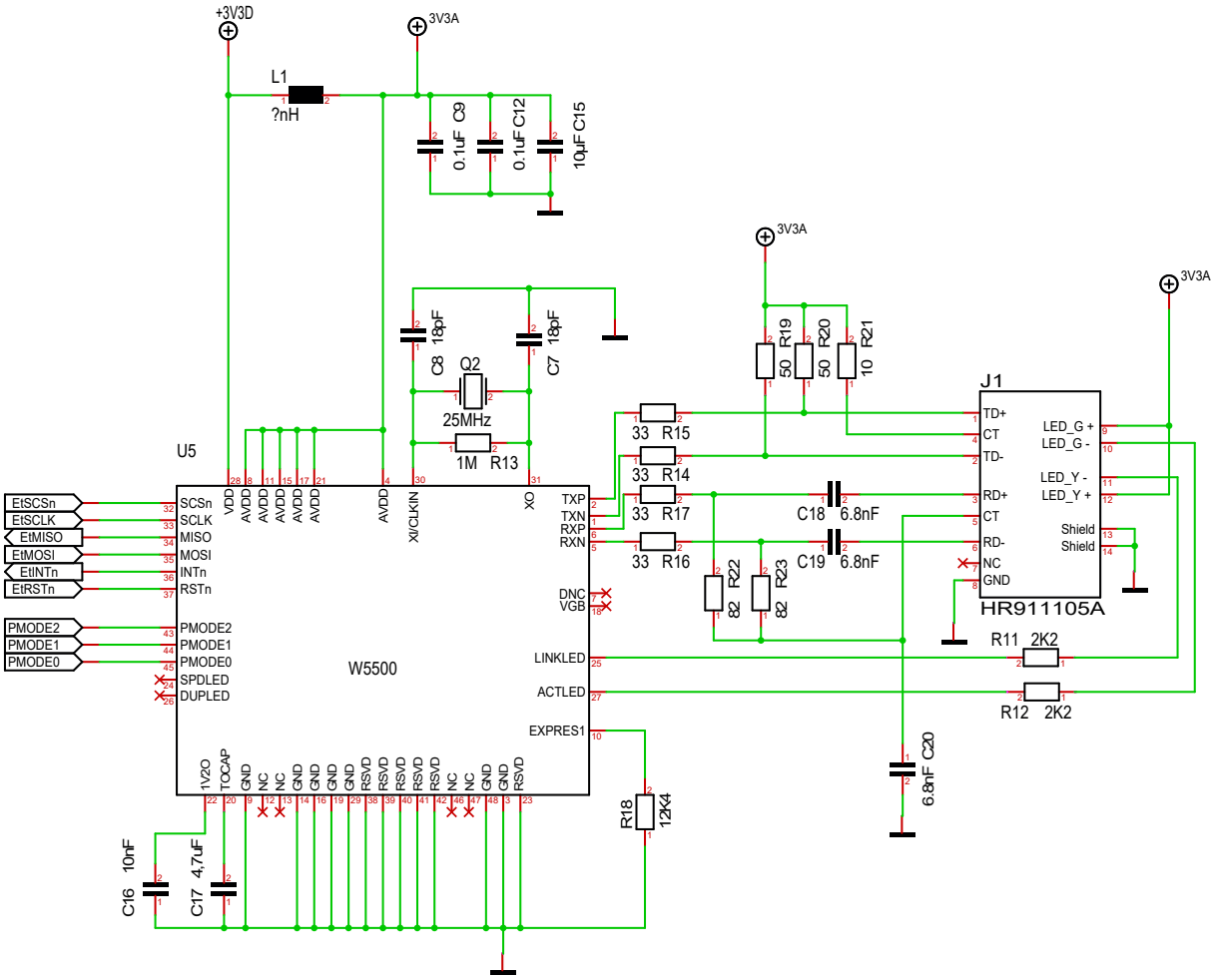
Classic linear regulater based on LM1117 capable of 5-12V in, 3.3V/1A out. 5V in is fetched from USB connector.

NRF24L01+ Schematics



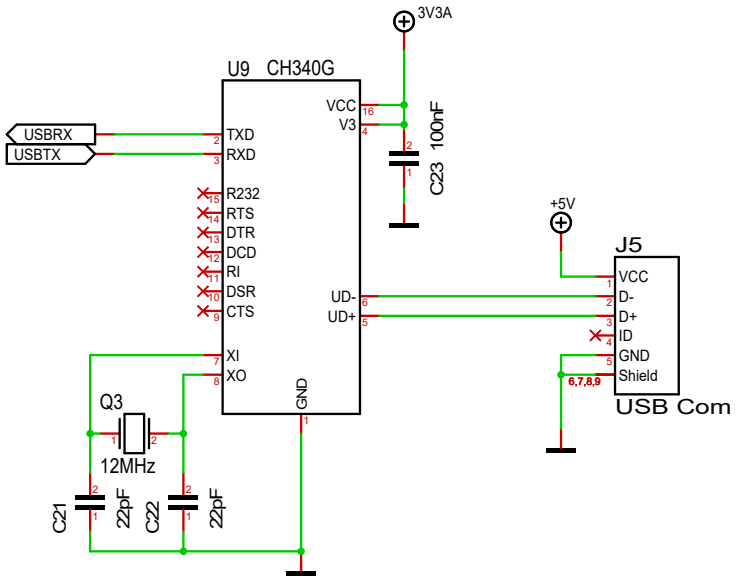
NRF24L01+ breakout modules. PCB support for two different modules. See NRF24L01+ doc for info on the 2.4Ghz Radio.

Ethernet Schematics



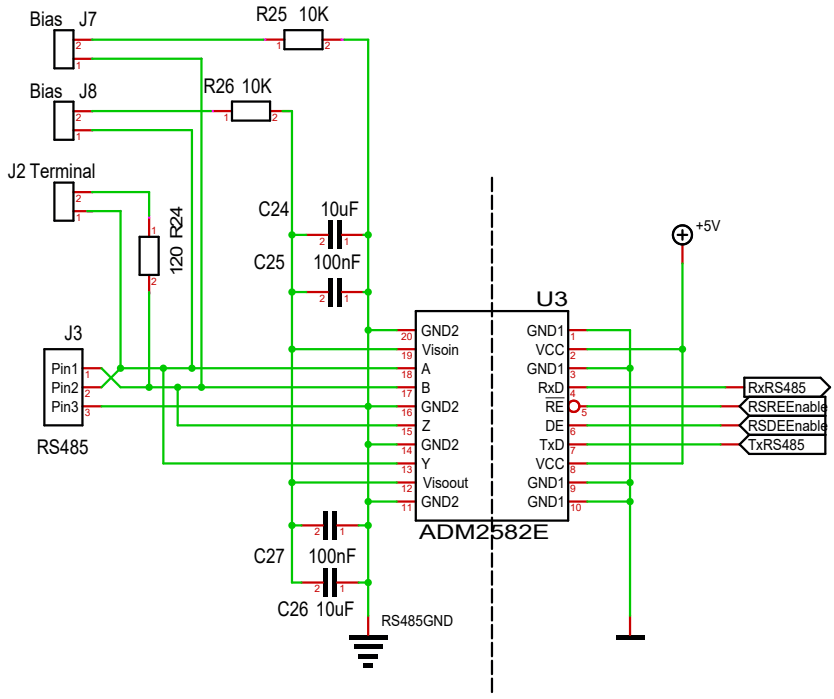
Reference diagram based on W5500 delivering 8 socket Ethernet/TCP connection. See wiznet documentation on W5500.

USB Serial Schematics



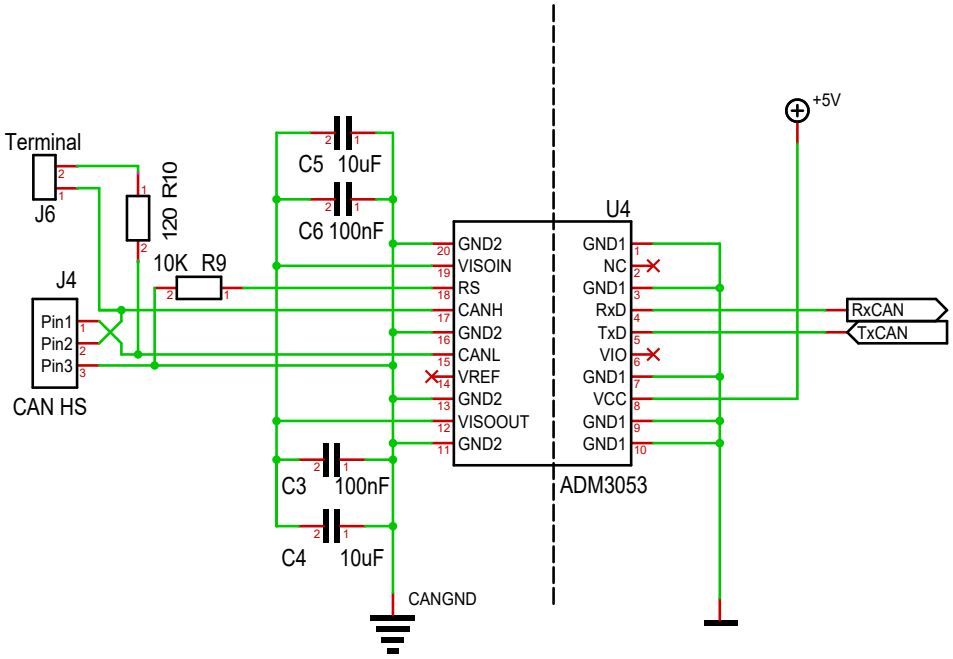
Uses CH340G to provide a Serial over USB on UART3. Also used as power connector.

RS485 Schematics



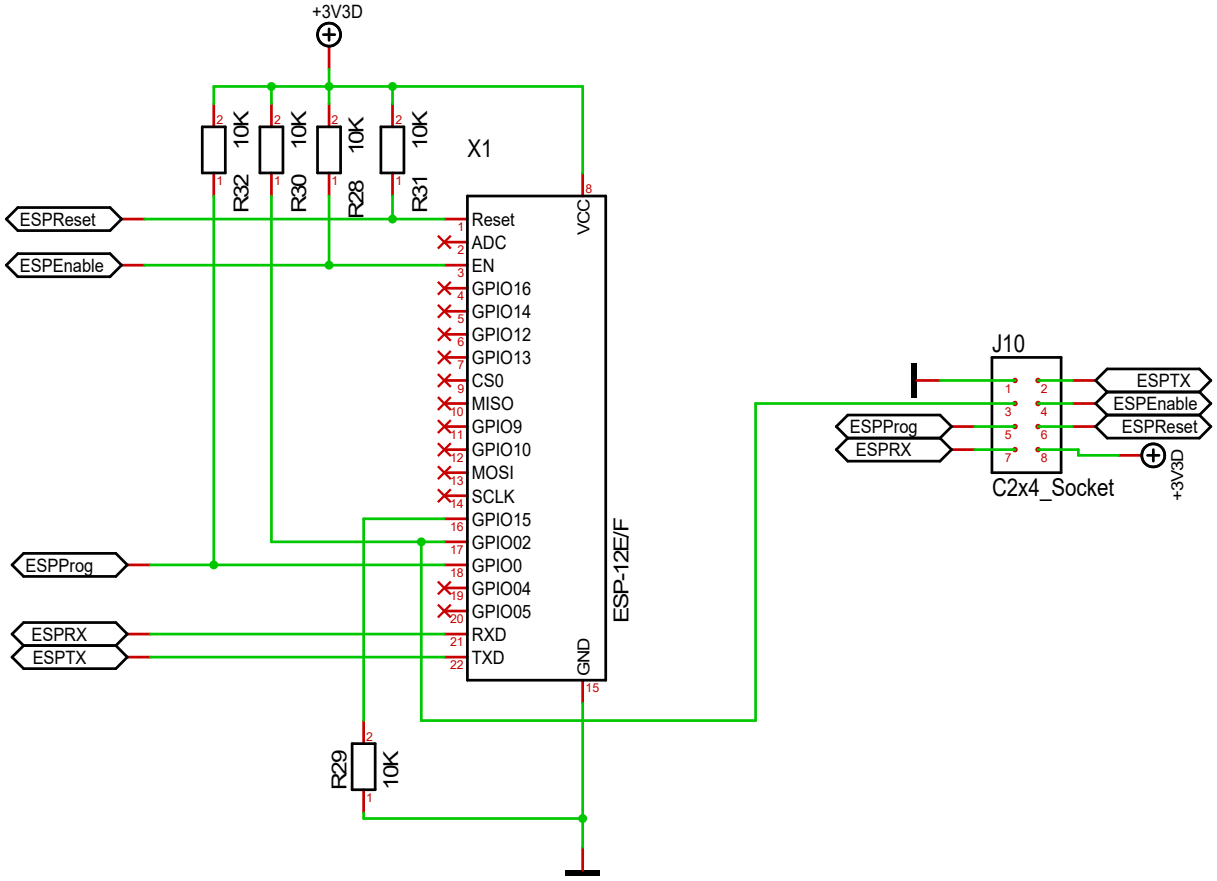
Uses ADM2582E as isolated RS485 transceiver. Supported with Terminator and Bias jumpers.

CAN Schematics



CAN HS using ADM5035 as CAN transceiver.

Wifi/ESP8266 Schematics



Support for ESP-12 and ESP-01 versions of ESP8266 Wifi breakout's.