

TEMCO CONTROLS LTD.

Bacnet Modbus Modules T3-22i

The T3 general purpose modules add input/output expansion space for building automation systems. Integrators regularly tell us they are winning more projects because of the excellent price point and features of these devices. Works well with Seimens,Reliable, Delta, KMD, Tridium, etc.

T3-22i support both Bacnet and Modbus over both RS485 and the ethernet ports. All settings are available as Bacnet objects and Modbus registers.



Highlights

- Surge-protected Universal Inputs with 12-bit resolution.
- UL listed ABS enclosure with rubberized texture creates a high end feel.
- The RS485 port has separate upstream and a downstream connectors to make trouble-shooting easier.
- Software configure the input ranges with the free T3000 software or by writing to the registers with your own software.
- Each input as well as the RS485 connections have a separate screw terminal, there's no need to gang two wires under one terminal for any of the terminations.
- Baudrates: 9600, 19200, 38400, 57600 and 115200bps
- The T3 modules support Bacnet over MSTP and TCP/IP as well as Modbus.
- Source code for the modules is available with your first purchase.
- T3000 front end is free and open source: github.com/temco-controls/T3000_Building_Automation_System
- Compiled version of the front end is here: www.temcocontrols.com/ftp/software/9TstatSoftware.zip

Specifications

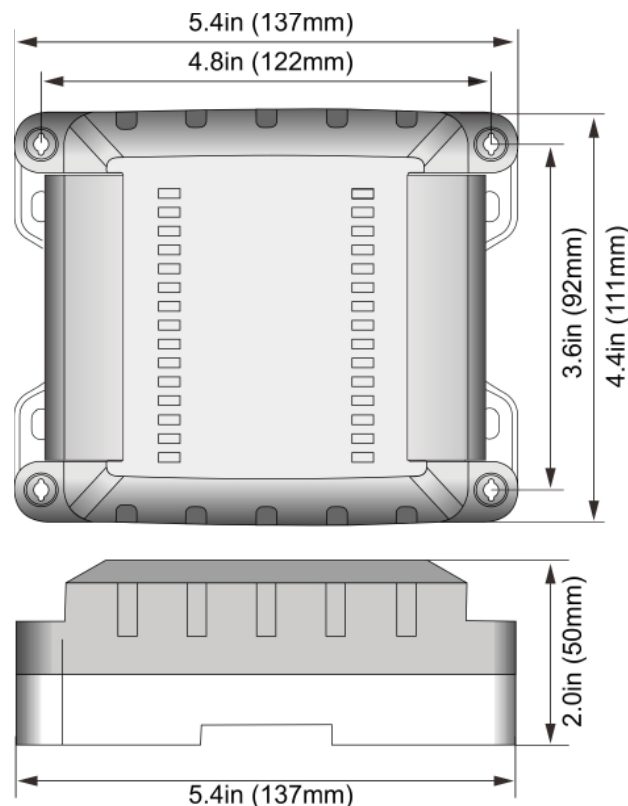
- Analog Input: 22 AI@0-5V, 0-10V, 4-20mA, 10K Type2 NTC.
- Digital Input: DI@pulse counter
- Baudrate: 9600, 19200, 38400, 57600, 115200
- Operating Temperature: -30~70°C (-22~158°F)
- Supply Voltage: 15~24VAC/DC ±10%, 50-60Hz
- Power Consumption: 100mA at 15~24VAC/DC
- Storage Temperature: -40~85°C
- Operating Ambient Humidity: 0-80 %Rh
- Communications: RS485, Ethernet
- Enclosure Color: Black

Features

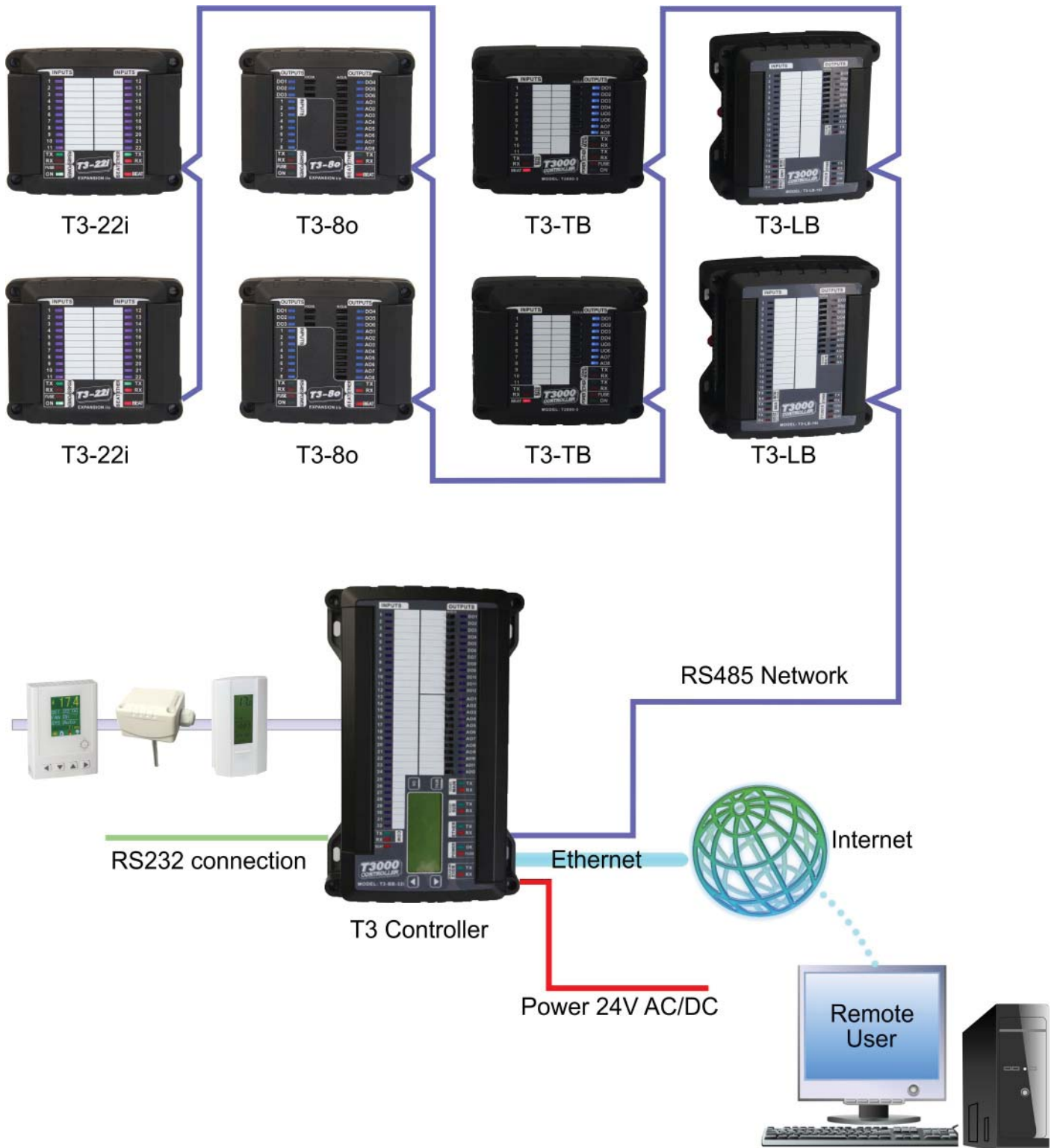
The T3-22i are amazing! The features that are most amazing:

- *Software Configurable I/O*
- *Ground Screw terminals for all 22 inputs.*
- *Feed through to aide in daisy chaining RS485 connection*
- *22 Pulse counters*
- *Higher Baud Rates*
- *BACNet support*
- *Supports Modbus TCP*
- *Cad is available, 3D and 2D acad/corel draw vector art.*

Dimensions

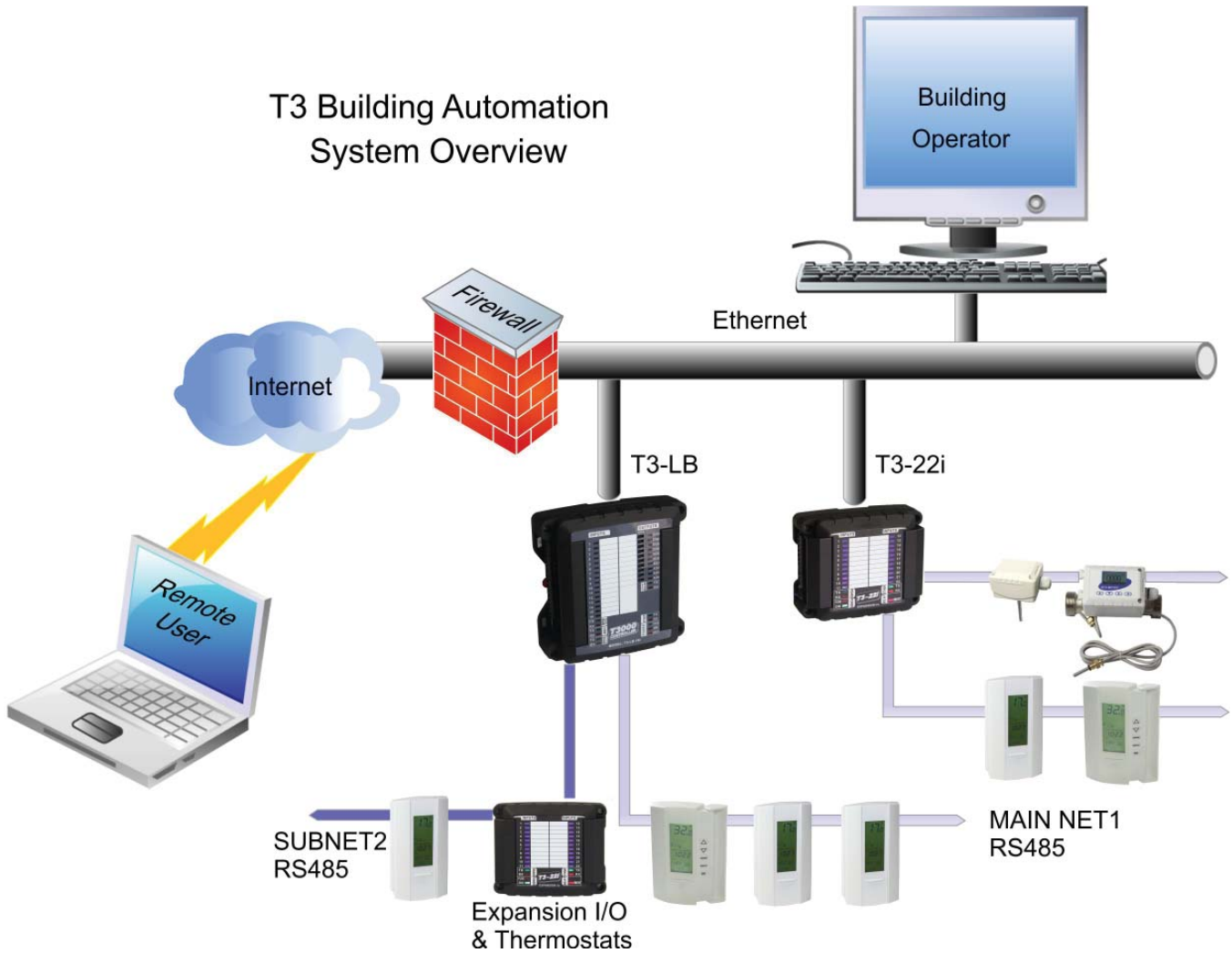


Network Diagram

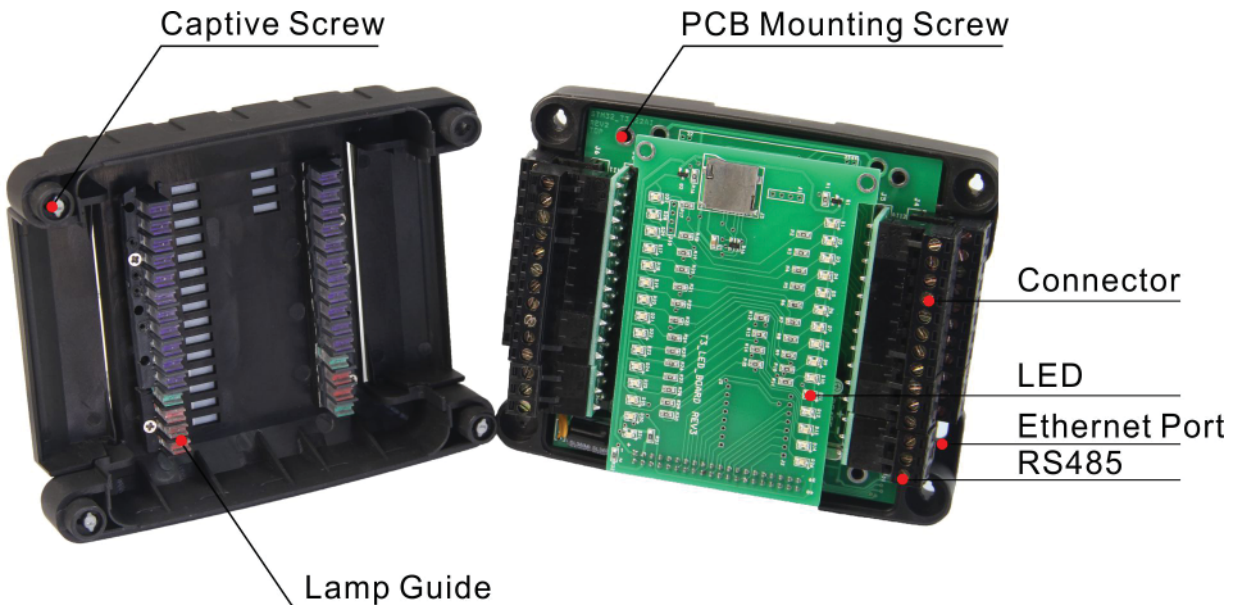


T3 Building System

T3 Building Automation System Overview



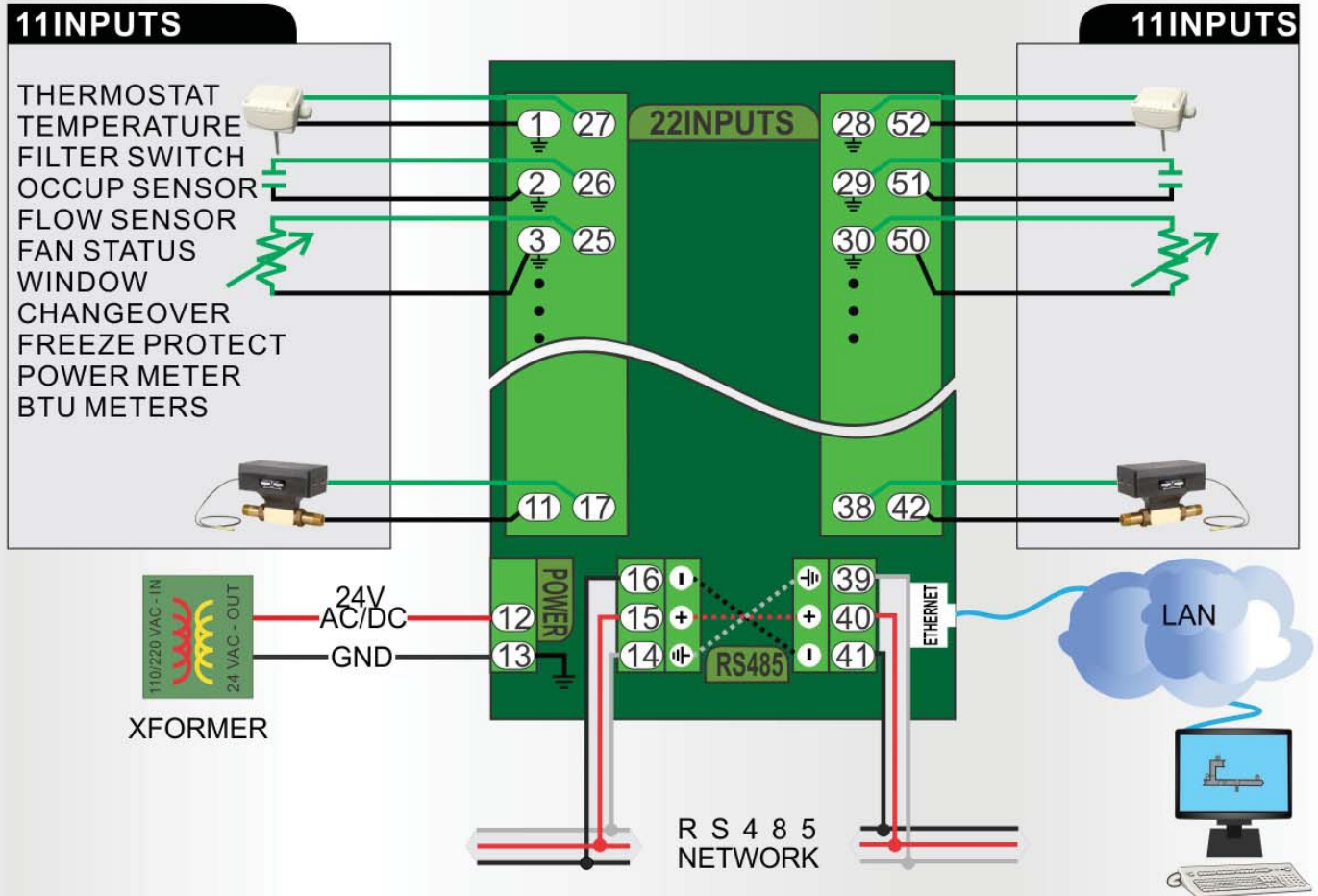
Product Highlights



Wiring Diagram

The T3-22i has 22 inputs, 2 RS485 terminals that share the same serial port, and 1 Ethernet port.

T3-22i
WIRING DIAGRAM



T3000 Software Instructions

1. Download T3000 software <https://temcocontrols.com/ftp/software/9TstatSoftware.zip> and install it.
2. Connect T3-22i to PC via RS485 at pin 14, 15 and 16 or Ethernet. Start the software T3000, it will show below the view.



- Graphics (Alt - G)
- Programs (Alt - P)
- Inputs (Alt - I)
- Outputs (Alt - O)
- Variables (Alt - V)
- Loops (Alt - L)
- Schedules (Alt - S)
- Holidays (Alt - H)
- Trend Logs (Alt - T)
- Alarms (Alt - A)
- Remote Points (Alt - T)
- Customer Units (Alt - U)
- Configuration (Alt - E)

Number	Name	Value	Range	Filter	Callora...
1	Input1	1022	- 5	500	
2	Input2	1022	- 5	500	
3	Input3	1022	- 5	500	
4	Input4	1022	- 5	500	
5	Input5	1022	- 5	500	
6	Input6	1022	- 5	500	
7	Input7	1022	- 5	500	
8	Input8	1022	- 5	500	

Enter Units Number : 14

High Speed Count

0. Unused

1. TYPE2 10K C

2. TYPE2 10K F

3. 0-100%

4. ON/OFF

5. OFF/ON

6 Low Speed Count

7. Lighting Control

8. TYPE3 10K C

9. TYPE3 10K F

10. NO USE

11. 0-5V

12. 0-10V

13. 0-20 ma

14 High Speed Count

ID Address 254 Change ID Serial Number 10000022 Go To Input

Firmware Version 0.0 Model T3-22AI

Hardware Version 1 PIC 0

TCP/IP Info

IP Model: STATIC Listening Port: 502

IP Address: 192 . 168 . 0 . 183 MAC Address: 04-02-35-AF-00-01

Subnet Mask: 255 . 255 . 0 . 0

Gateway Address: 192 . 168 . 0 . 4

Apply

Selected	Building	Protocol	IP / Domain / Tel#	IP Port	COM Port	Baud Rate	Build
	Default_Building	Auto	N/A	N/A	N/A	N/A	Database\Buildings\Default_Building\Default_Building.mdb

Each input of a T3-22i can be configured in 1 of 5 ways:

- 0-5V
- 0-10V
- 4-20mA
- 10K type2 NTC
- pulse counter

The value of each input is stored as a 12-bit number in the respective modbus register.

The maximum values for the 5V, 10V, 20mA is 4095, and pulse counter configurations would produce a reading of $65536 \times 65536 = 4294967296$. Each input has a corresponding LED which will light up if the value of the input is greater than 2048.

Here following one table showing the info of pulse input.

Model	Number of inputs	Register address	Pulse	
T3-22i	22	1-11	100-121	High Speed: Support up to 100KHz pulse input
		12-22	122-143	Low Speed: Support up to 100Hz pulse input

T3-22i Register List

Address	Bytes	Register Description	Bacnet
0~3		Serial number	AV0
4		Firmware version number	AV1
5		software version number	AV2
6		modbus service address	AV3
7		product model	AV4
8		hardware version number	AV5
9~13		spare	
15		baudrate	AV6
16~39	0	spare	
40~45	1*6	Mac address. Read only	
46	1	Ip mode. 0 = static 1=dynamic Read only	
47~50	1*4	Ip address Read only	
51~54	1*4	sub mask address Read only	
55~58	1*4	gateway address Read only	
59	1	tcp server Read only	
60	2	listen port Read only	
61	1	gost ip mode Read/Write	
62~65	1*4	gost Ip address Read/Write	
66~69	1*4	gost sub mask address Read/Write	
70~73	1*4	gost gateway address Read/Write	
74	1	gost tcp server Read/Write	
75	2	gost listen port Read/Write	
76	1	gost write gost value to sytem and refresh the the real parameter Read/Write	
77 to 99	0	spare	
100	2	Input1 high word	AI1
101	2	Input1 low word Input1: 2 registers, Value = Reg100 * 65535 + Reg 101 The A/D conever is 12 bits so for most ranges you can read reg101 only. For pulse counting use reg 100 and 101.	
102	2	Input2 . see input1 description for details	AI2
103	2		
104	2	Input3 . see input1 description for details	AI3
105	2		
106	2	Input4 . see input1 description for details	AI4
107	2		

T3-22i Register List

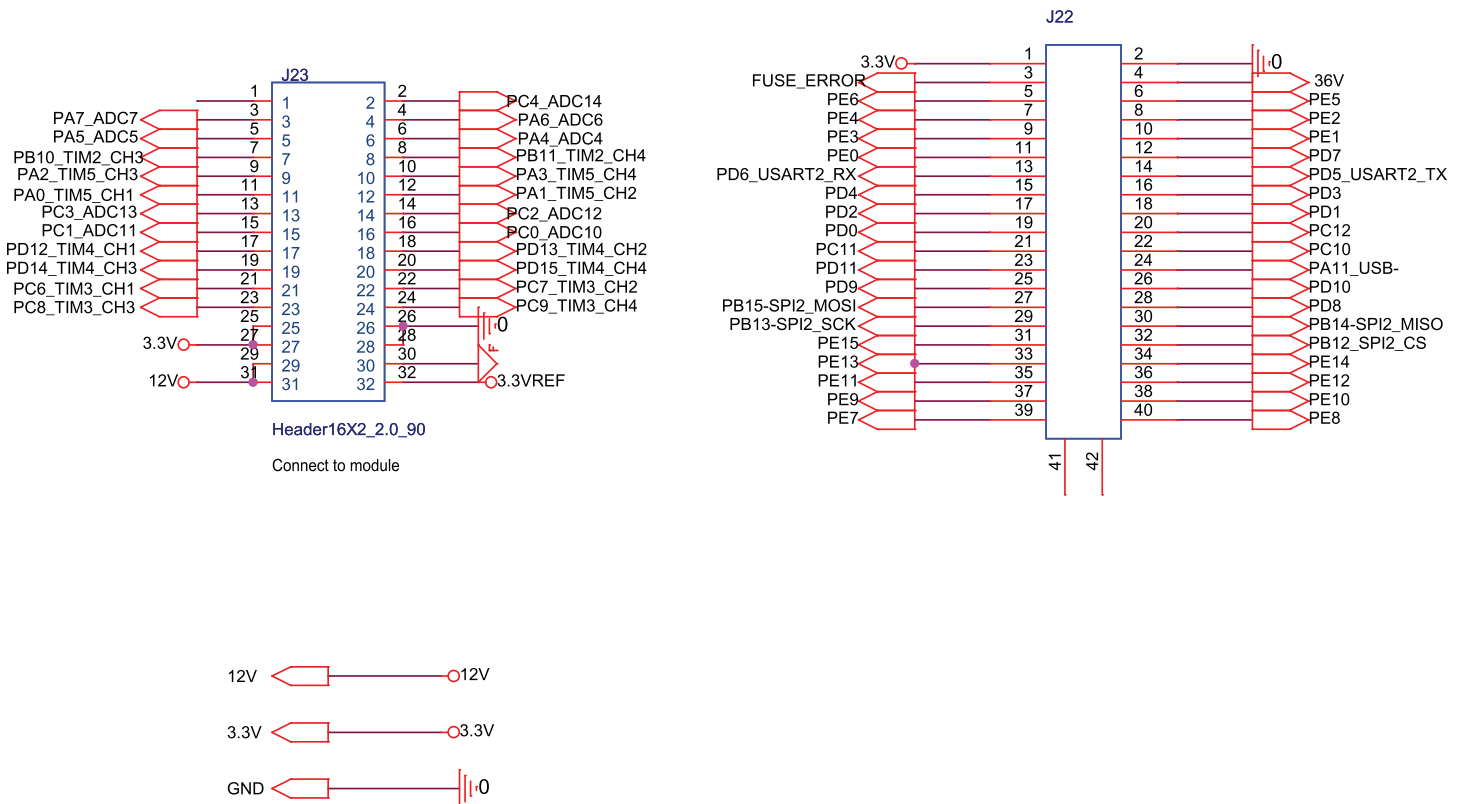
Address	Bytes	Register Description	Bacnet
108	2	Input5 . see input1 description for details	AI5
109	2		
110	2	Input6 . see input1 description for details	AI6
111	2		
112	2	Input7 . see input1 description for details	AI7
113	2		
114	2	Input8 . see input1 description for details	AI8
115	2		
116	2	Input9 . see input1 description for details	AI9
117	2		
118	2	Input10 . see input1 description for details	AI10
119	2		
120	2	Input11 . see input1 description for details	AI11
121	2		
122	2	Input12 . see input1 description for details	AI12
123	2		
124	2	Input13 . see input1 description for details	AI13
125	2		
126	2	Input14 . see input1 description for details	AI14
127	2		
128	2	Input15 . see input1 description for details	AI15
129	2		
130	2	Input16 . see input1 description for details	AI16
131	2		
132	2	Input17 . see input1 description for details	AI17
133	2		
134	2	Input18 . see input1 description for details	AI18
135	2		
136	2	Input19 . see input1 description for details	AI19
137	2		
138	2	Input20 . see input1 description for details	AI20
139	2		
140	2	Input21 . see input1 description for details	AI21
141	2		
142	2	Input22 . see input1 description for details	AI22
143	2		
144~199	0	spare	AV32
200~221	2	filter for input1 through 22	AV7~28

T3-22i Register List

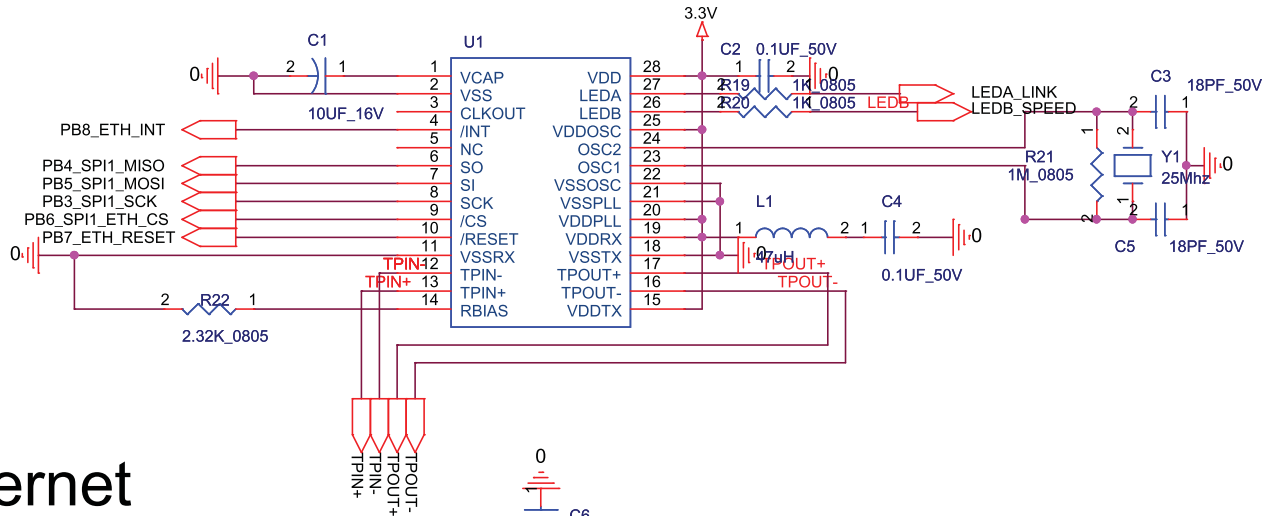
Address	Bytes	Register Description	Bacnet
222~224	0	spare	
225~246	1 x 22	range for input1 through 22	AV29~50
247~249	0	spare	
250~271	2 x 22	offset for input1 through 22	AV51~72

T3-22i

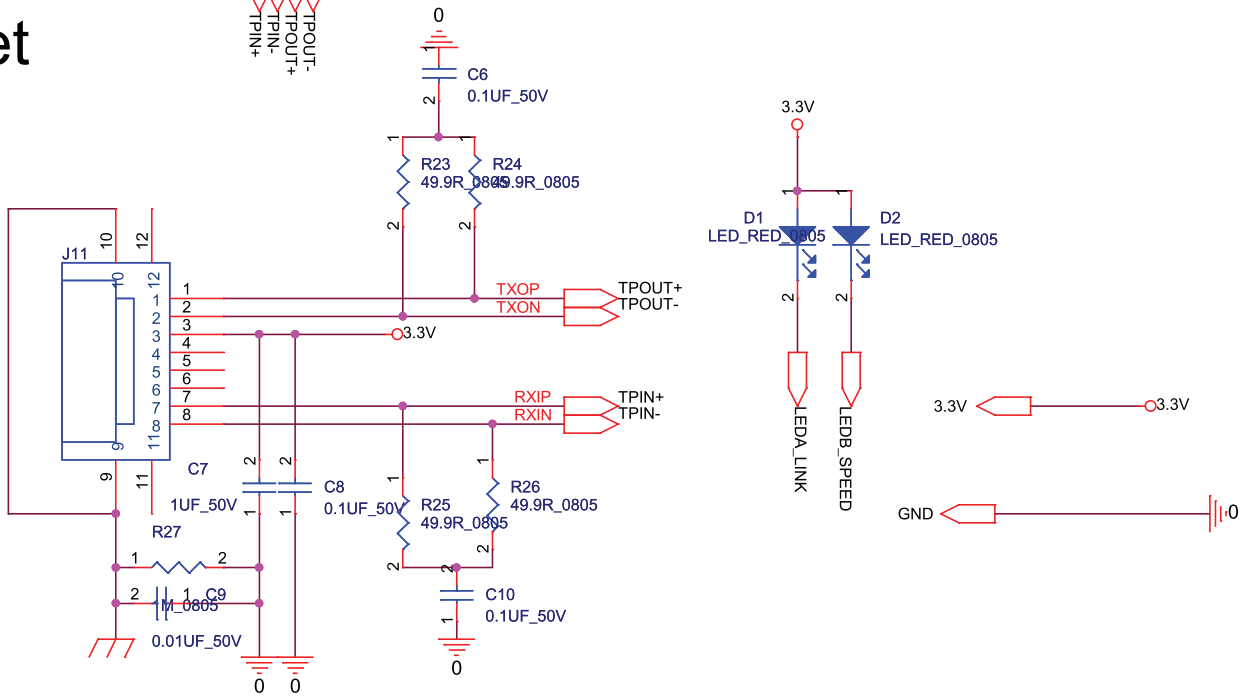
1. T3-22i stm32_t3_rev3



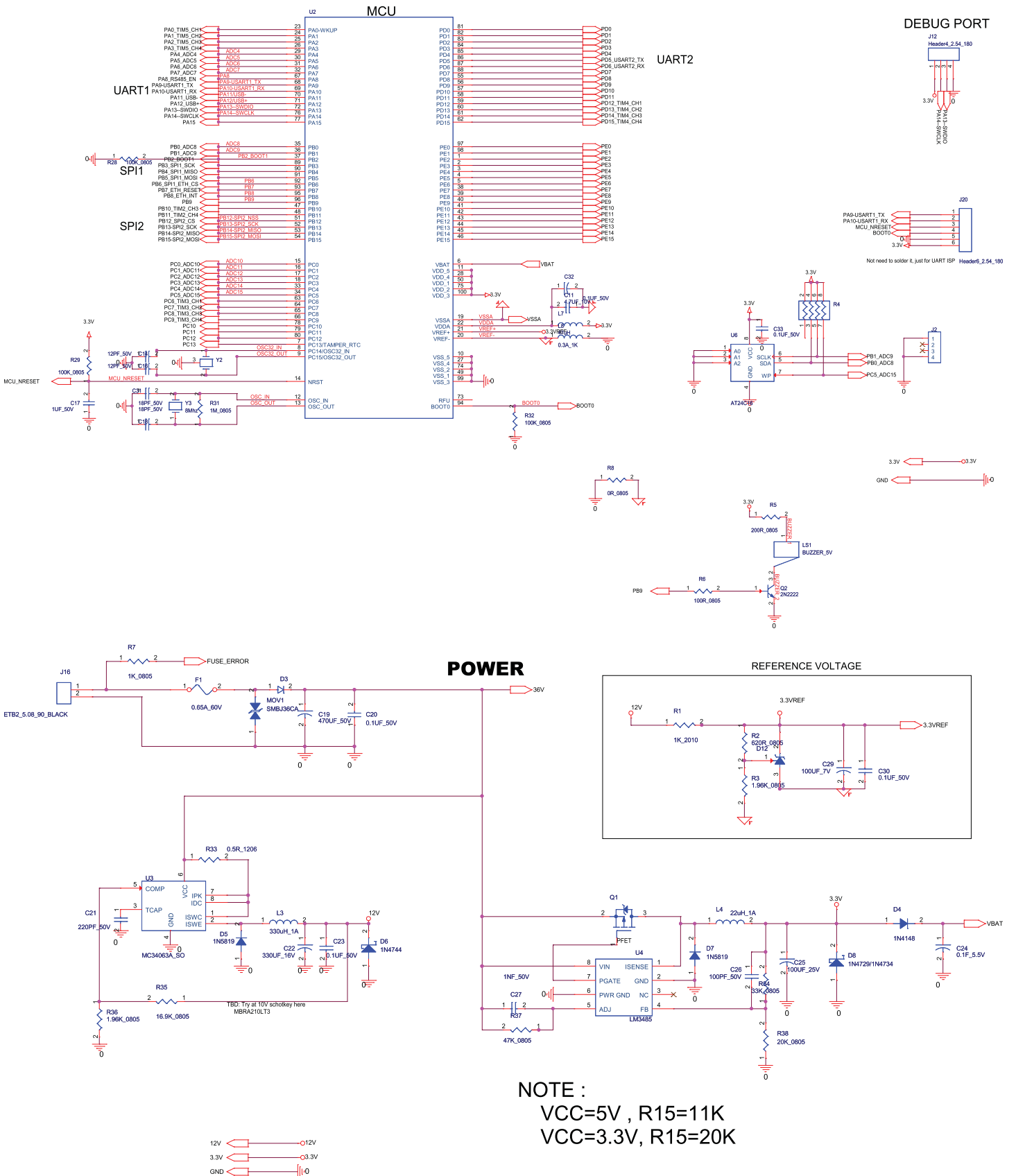
T3-22i



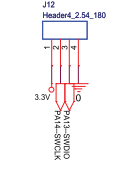
Ethernet



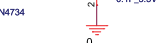
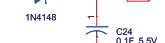
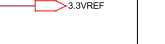
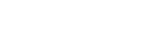
T3-22i



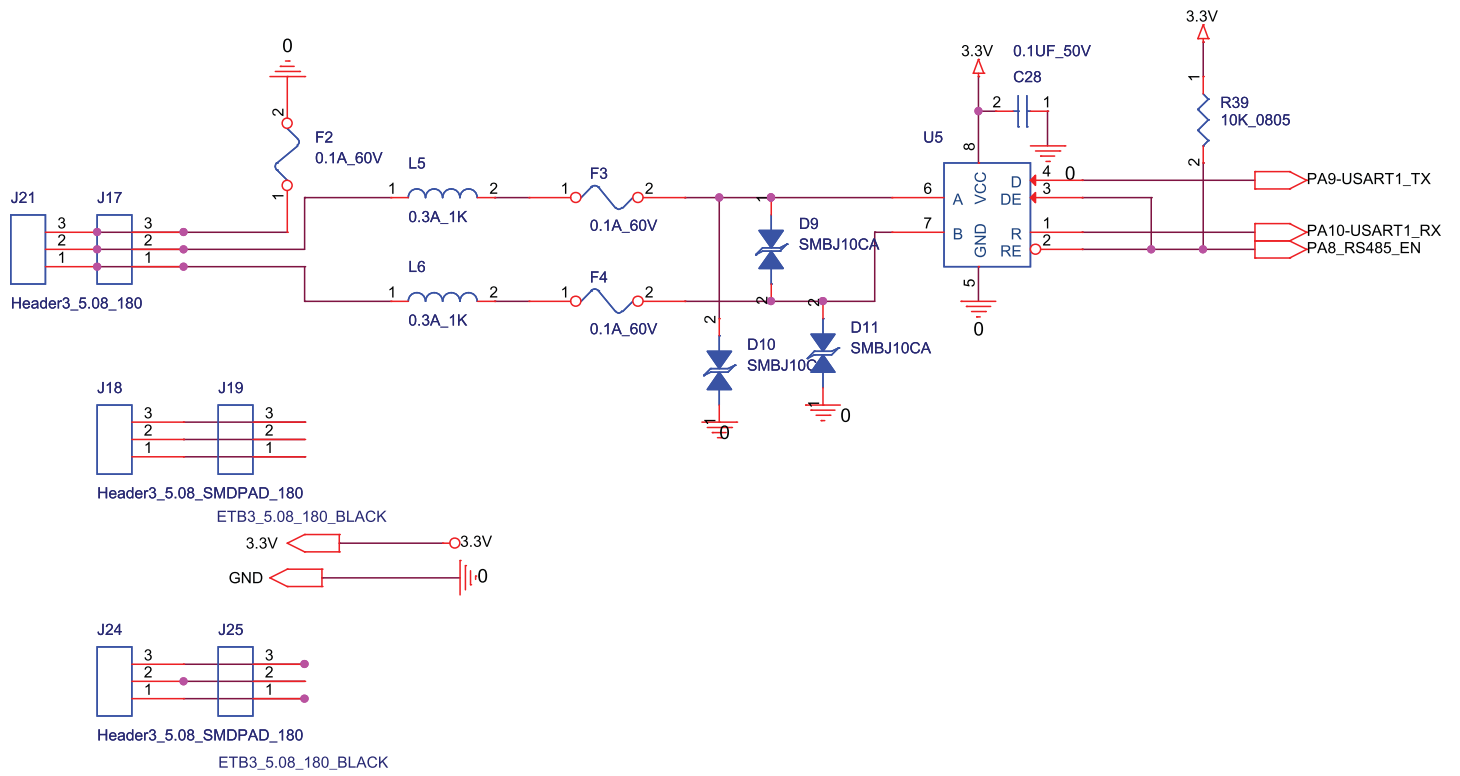
DEBUG PORT



Not need to solder it, just for UART ISP Header5_2.54_180

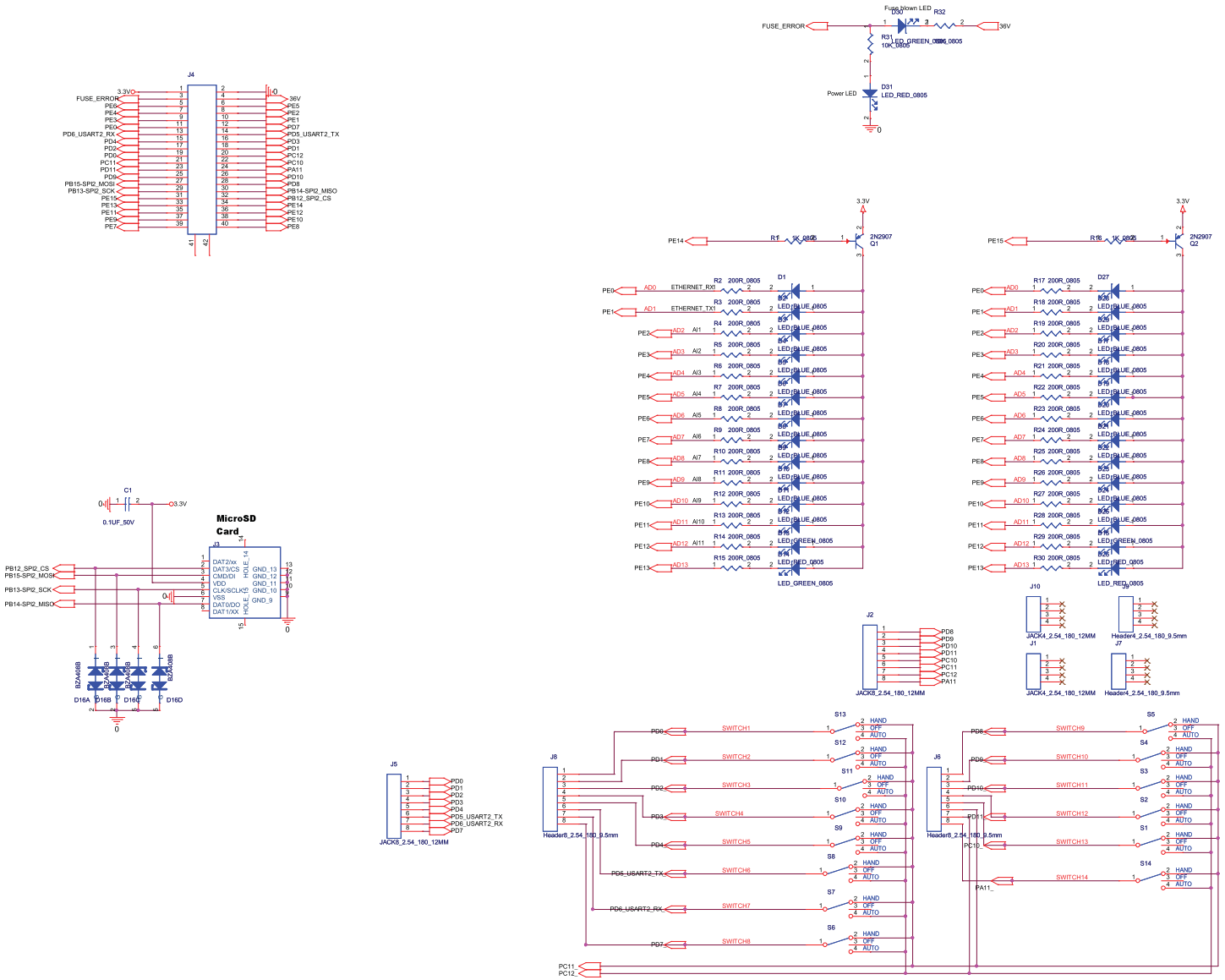


T3-22i



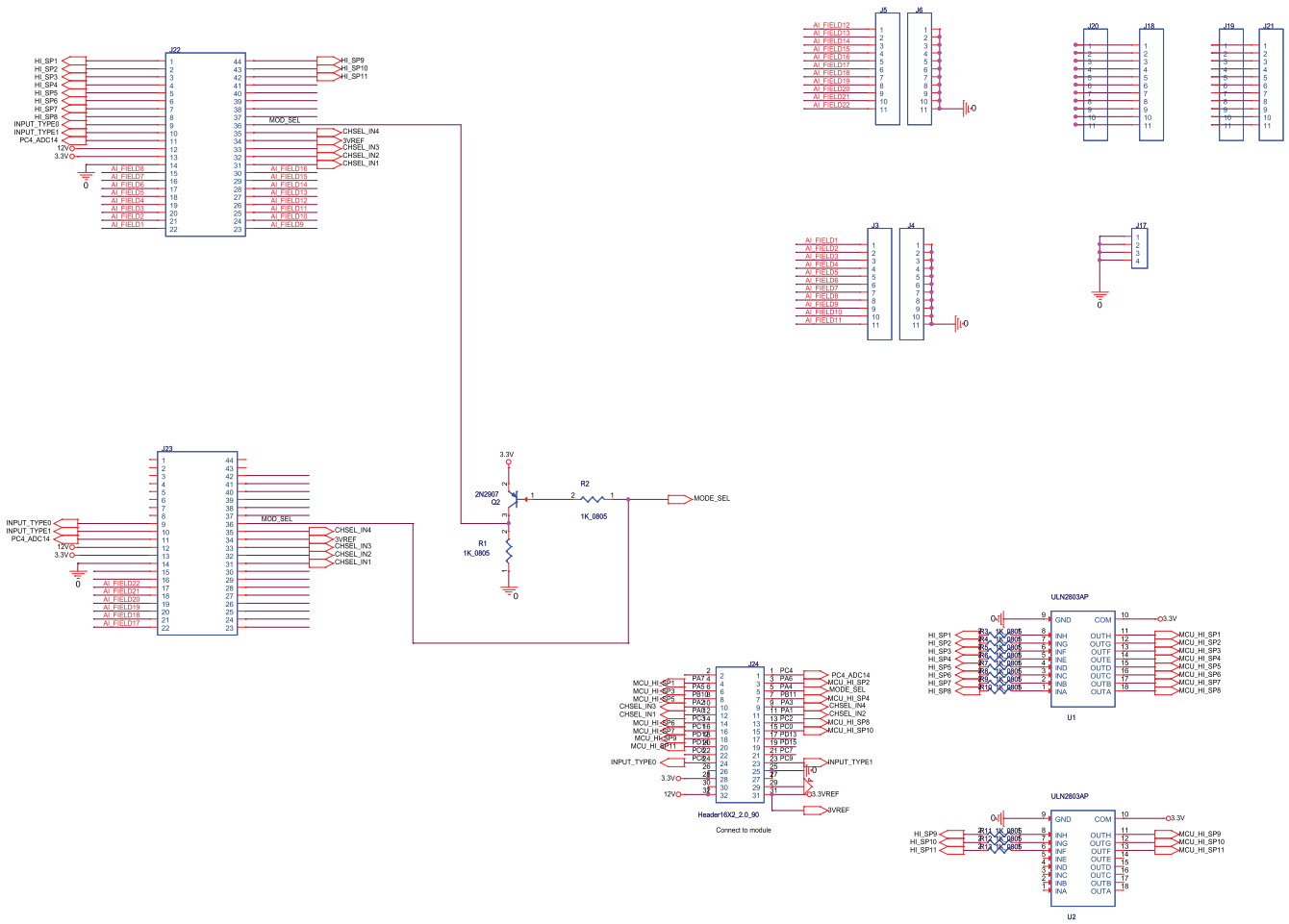
T3-22i

2. T3-22i stm32_t3_LED&SW_rev3



T3-22i

3. Stm32_t3_22ai_rev3



4. Input module_16 channel_rev2

