Starter Kit Board HW

Index

STK Board

1   Relay contacts 1-4
2   Complete cabling to TPAC1007 (included)
3   On-Off led and switch
4   Relay for digital outputs 1-4
5   Leds and buttons for digital inputs 9-12
6   24Vdc@500mA power supply (included)
7   Leds and switches for digital inputs 1-8
8   Analog output
9   Led bar for analog output
10   Trimmer and signal generator for analog inputs (square and sinusoidal wave)
11   Direct connection to sensors and external signals
12   Direct connection to digital input/output
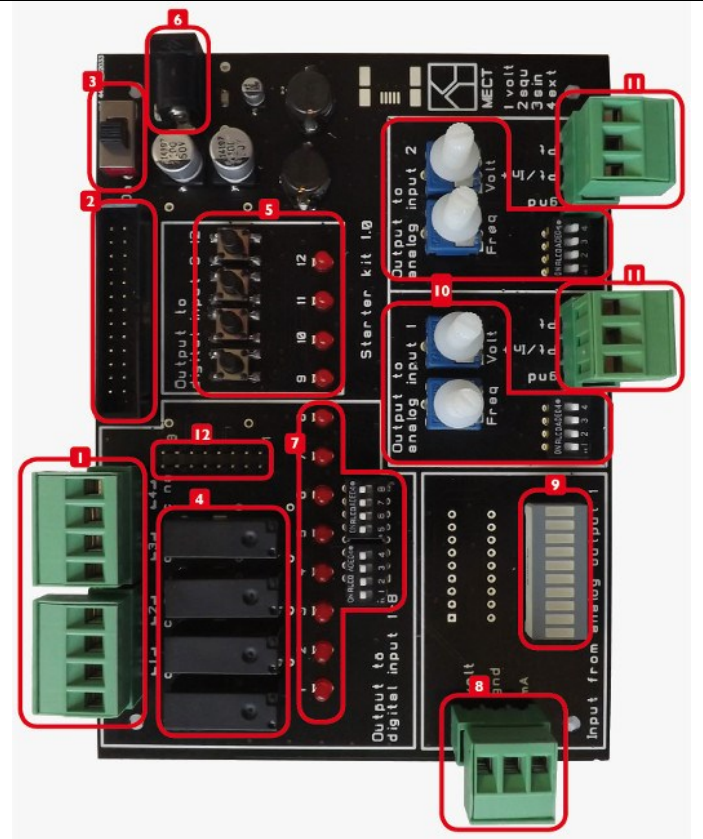
STK Board microcontroller

STK Board is based on a CortexM3 (uC) microcontroller programmed to generate on two channels signals like sinusoidal wave, square wave and a continous level. The selection of which wave is driven on output to each channel is choosen by dip switches SW1 (for channel 1) and SW2 (for channel 2).

Two trimmers, P2 and P4, are read from uC and they regulate the frequency of the waves generated.

Two trimmers, P1 and P3, attenuate the output waveforms.

Voltage

The board power supply is 24Vdc supplied from connector J3 all other voltages are generated by local regulators. The switch J2 break the power supply to the board. The power the TPAC1007 is furnished from connector J1

Connectors

J1 connects the signals and power of the TPAC1007 as follow:

Position	Name	Meaning	Notes
1.	PT100_1	PT100 1 input	NA
2.	IN_1_PT100_1	Analog input	
3.	GND		
4.	PT100_2	PT100 2 input	NA
5.	IN_1_PT100_2	Analog input	
6.	outV	Voltage analog output from TPAC	Signal routed on M3-3 terminal block, and displayed on Led bar
7.	outI	Current analog output frommTPAC	Signal routed on M3-1 terminal block
8.	TXD0	TPAC Consolle Transmission signal	Routed to J5 connector
9.	RXD0	TPAC Consolle Receive signal	Routed to J5 connector
10.	In12	TPAC digital Input 12	Routed to PS4 button and led DL13
11.	In11	TPAC digital Input 11	Routed to PS3 button and led DL12
12.	GND		
13.	In10	TPAC digital Input 10	Routed to PS2 button and led DL11
14.	In9	TPAC digital Input 9	Routed to PS1 button and led DL10
15.	IO1	Digital input- output 1 from TPAC	Routed to DIP switch DS2, led DL2, J4 connector and Relay OUT1
16.	IO2	Digital input- output 2 from TPAC	Routed to DIP switch DS2, led DL3, J4 connector and Relay OUT2
17.	IO3	Digital input- output 3 from TPAC	Routed to DIP switch DS2, led DL4, J4 connector and Relay OUT3
18.	IO4	Digital input- output 4 from TPAC	Routed to DIP switch DS2, led DL5, J4 connector and Relay OUT4
19.	IO5	Digital input- output 5 from TPAC	Routed to DIP switch DS2, led DL6 and J4 connector
20.	IO6	Digital input- output 6 from TPAC	Routed to DIP switch DS2, led DL7 and J4 connector
21.	IO7	Digital input- output 7 from TPAC	Routed to DIP switch DS2, led DL8 and J4 connector
22.	IO8	Digital input- output 8 from TPAC	Routed to DIP switch DS2, led DL9 and J4 connector
23.	D-	RS485 – line	Modbus line from TPAC
24.	D+	RS485 + line	Modbus line from TPAC
25.	GND		
26.	+24V		Power supply to TPAC

Relays

The four relays available on board are connected to digital input-output each relay can be loaded with 3A max.

Dip switches and trimmer

There are 3 dip switches:

- DS2 simulate a digital input to TPAC
- SW2 routed to CortexM3 to select which wave generate on channel 1
- SW1 routed to CortexM3 to select which wave generate on channel 2
- Trimmer P2 routed to CortexM3 to regulate the frequency of wave generated on channel 1
- Trimmer P4 routed to CortexM3 to regulate the frequency of wave generated on channel 2
- Trimmer P1 used to attenuate the wave generated on channel 1
- Trimmer P3 used to attenuate the wave generated on channel 2

Led bar

The led bar is driven by CortexM3, the basic firmware lights-on about one led at volt that coming from TPAC's analog output.

Links

More information on the following links:

http://www.mect.it/en/products/kit/starter-kit/starter-kit-tpac1007/

https://github.com/MECTsrl/stk_board