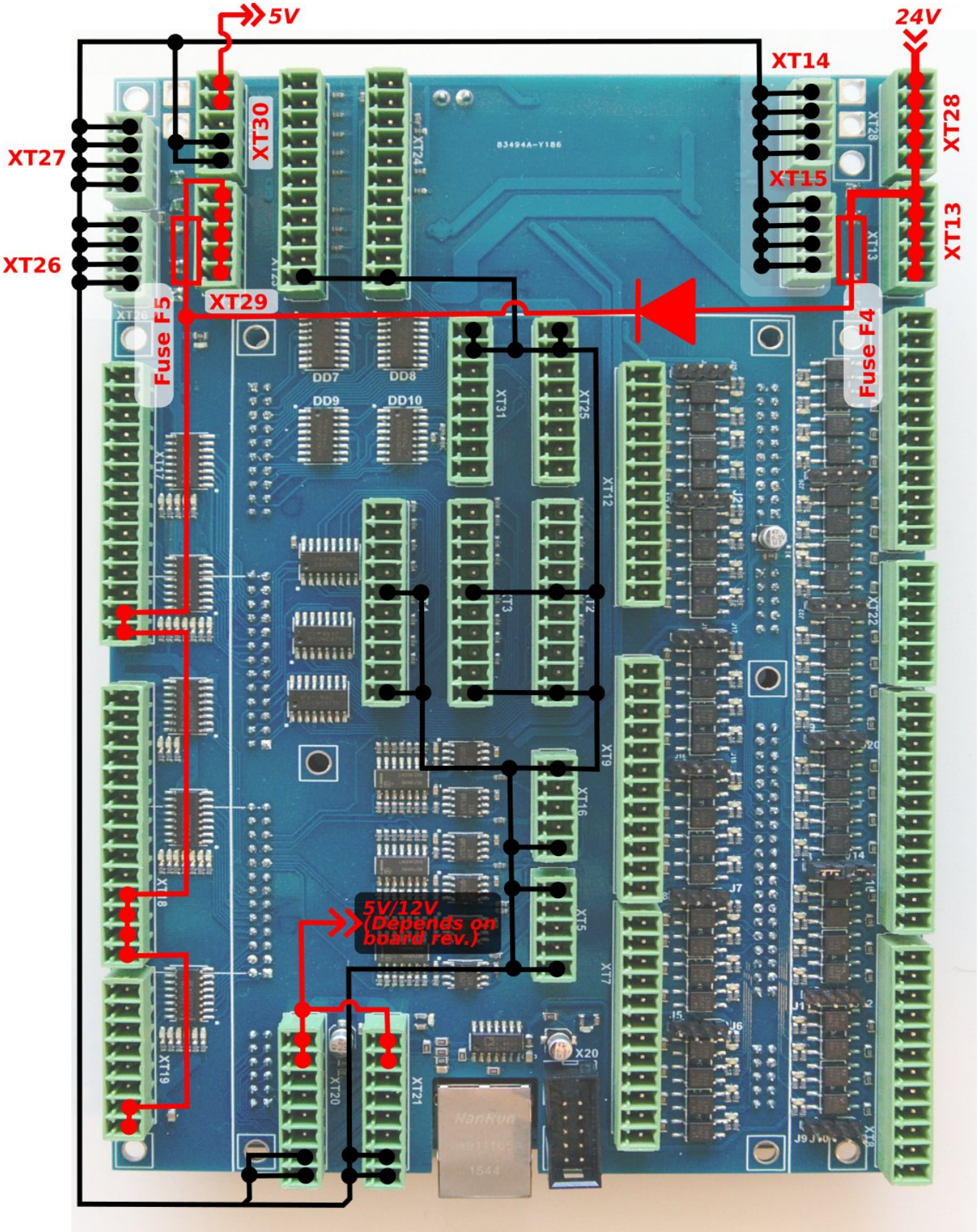
myCNC-ET10 CNC controller

Power supply connection

24VDC is used to supply myCNC-ET10 control board. The board contains 4 pins for connection +24V (joined internally) and a number of GND pins for convenient connection of external devices. Power Supply 24V DC and +24V and GND pins are shown in a picture below.



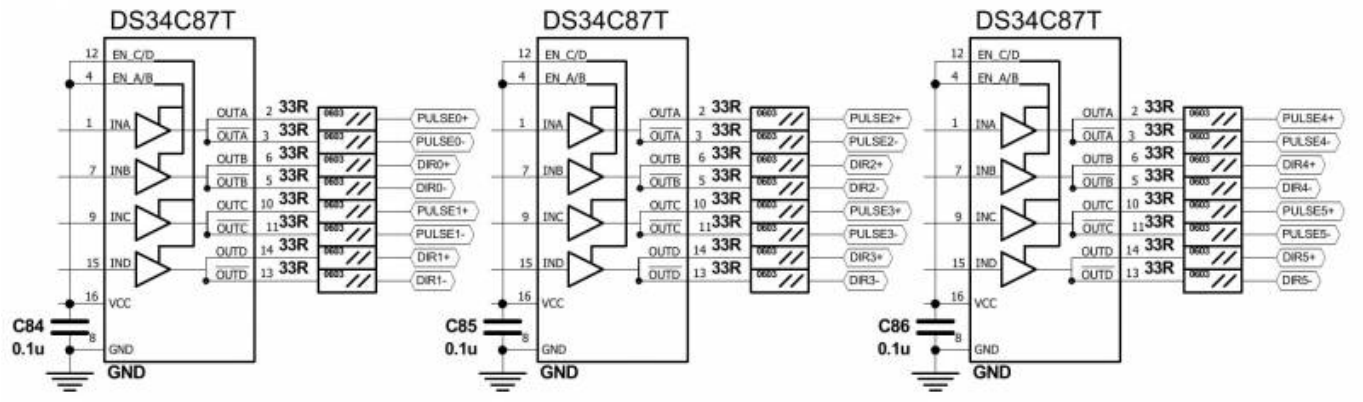
Pulse-Dir outputs

ET10 has 6 channel pulse/dir outputs, 3MHz max pulses frequency.

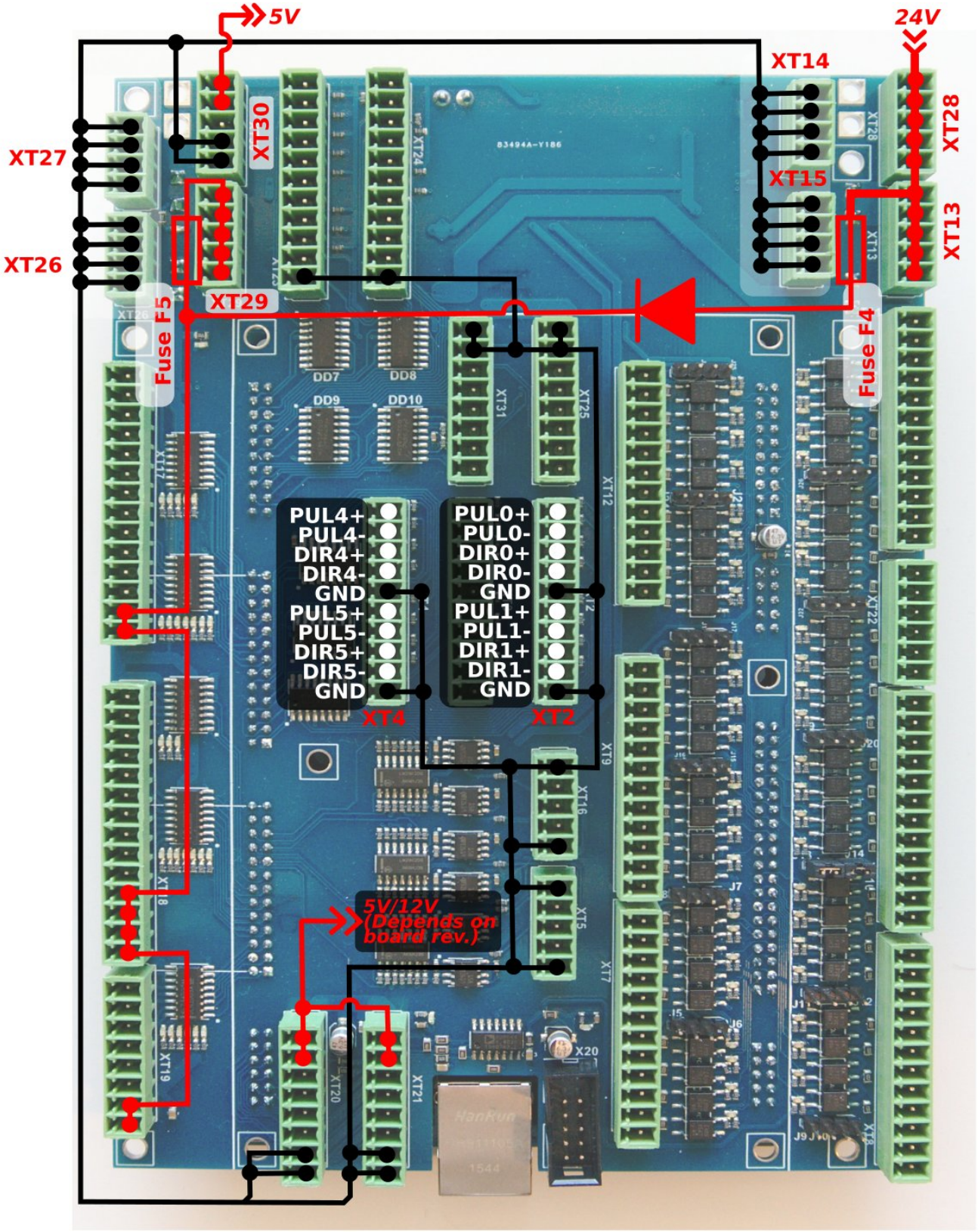
ET10 pulse dir outputs conform RS422 standard and compatible with most of servo and stepper

drivers (line driver with paraphase signals positive and negative polarity). Internal schematic for pulse-dir is shown in a picture below.

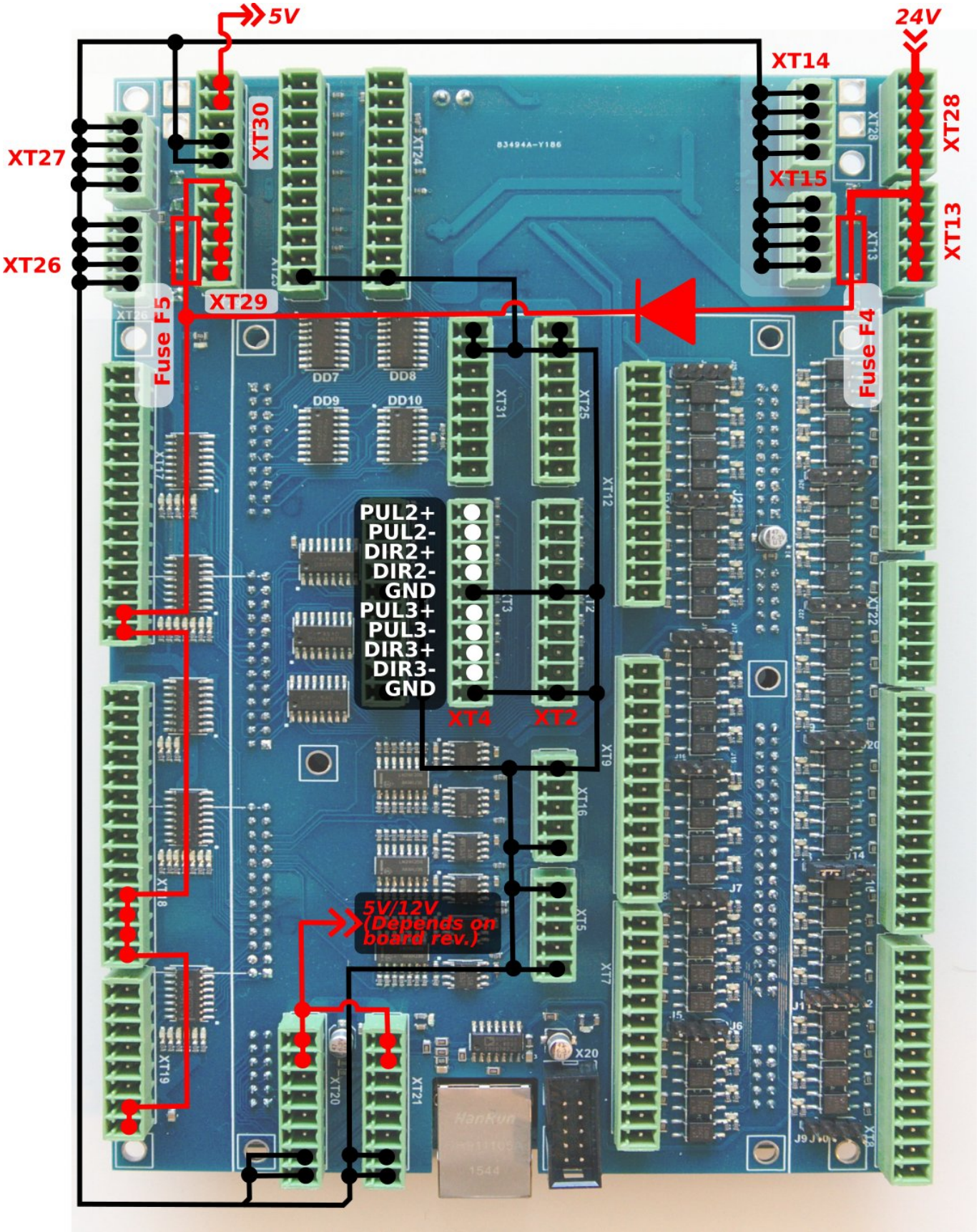
Pulse-dir schematic



PULSE-DIR channels 0,1,4,5 pinout



PULSE-DIR channels 2,3 pinout



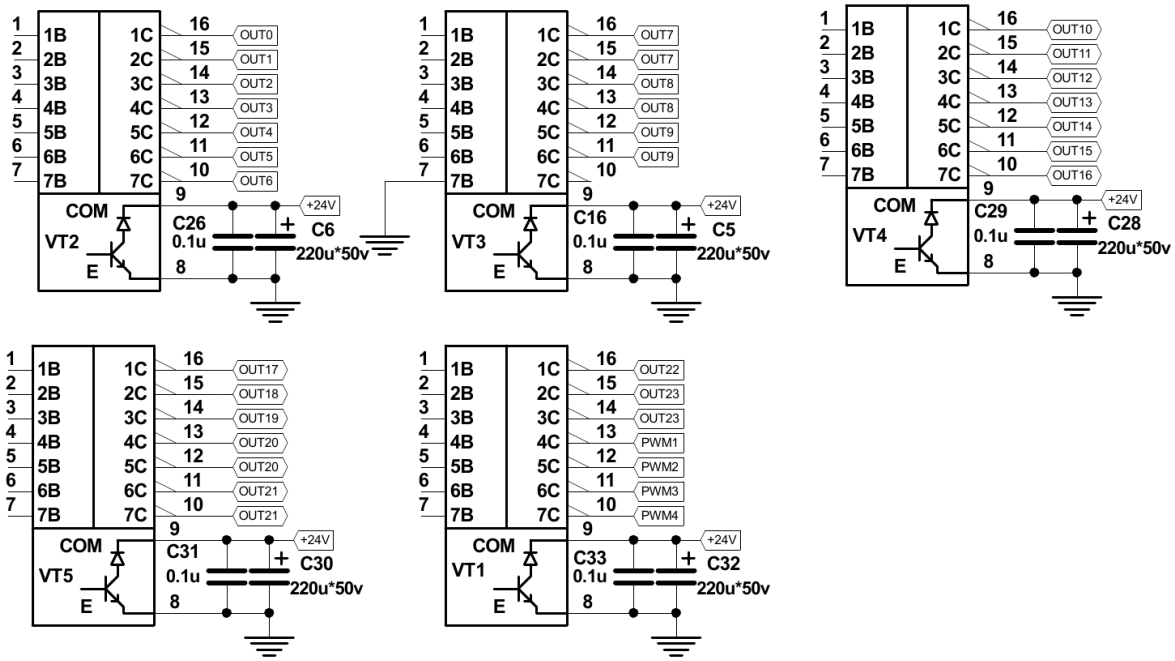
ET10 Output pins

ET15 board contains ... output pins-

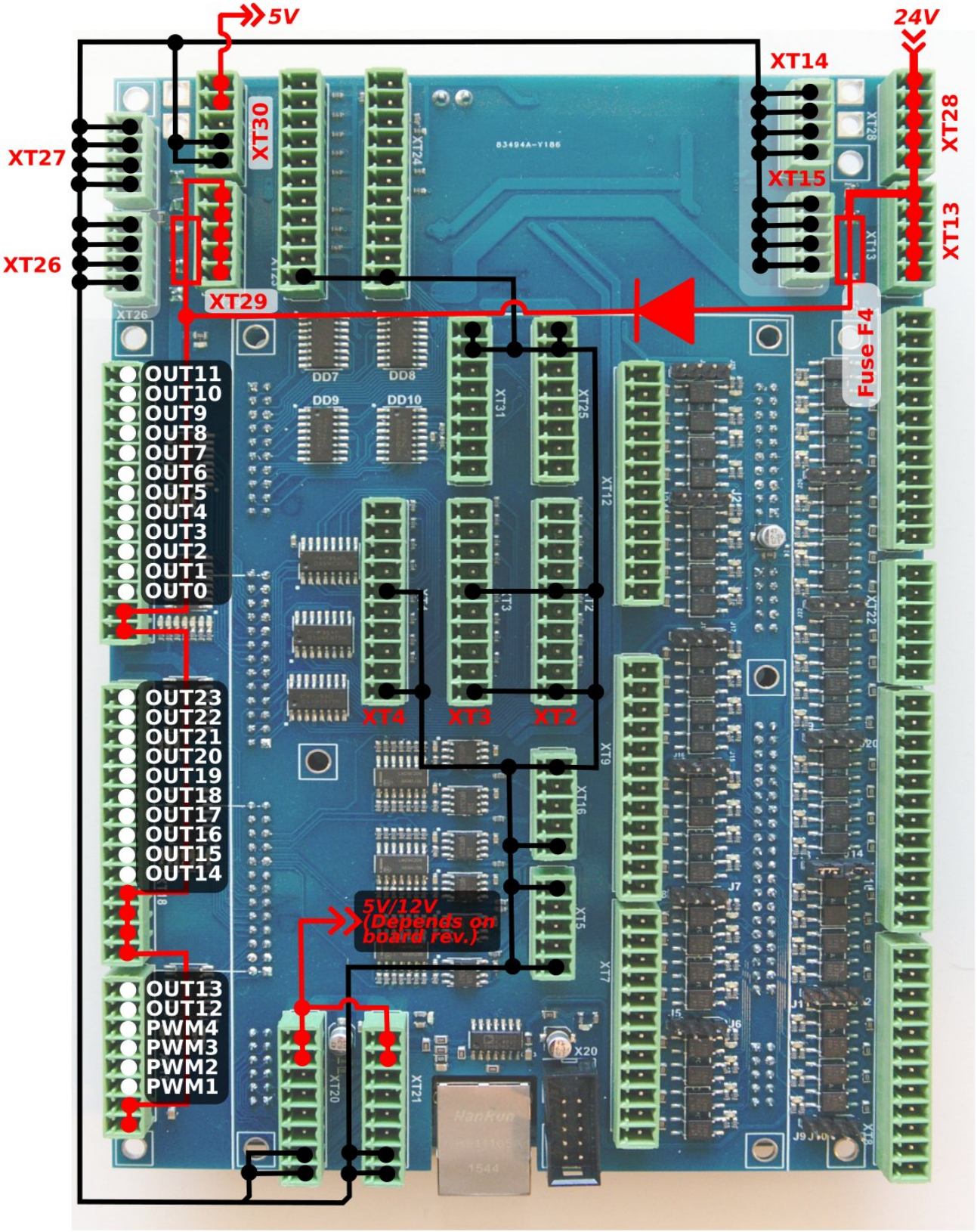
- 24 open collector outputs (OUT#0 ... OUT#23)

- 4 PWM outputs (PWM#1, PWM#2, PWM#3, PWM#4)

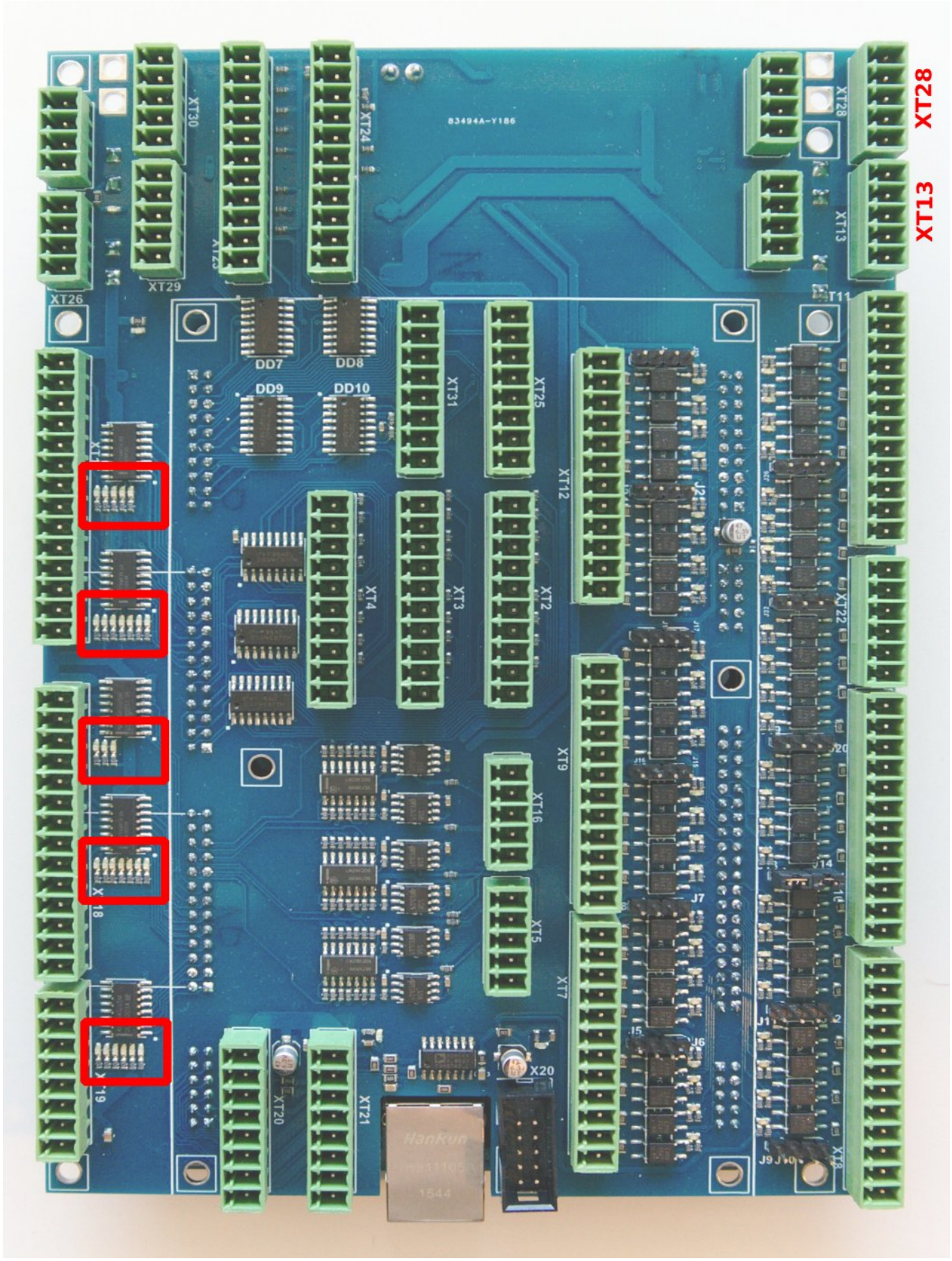
An internal schematic is shown in the picture below. Darlington transistors array chips ULN2003 are used to buffer binary outputs in ET10. Each chip contains 7 transistors and handles up to 7 binary outputs. We recommend to not exceed 0.25A output current for each output pin (however ULN2003 maximum current is 0.5A according to datasheet).



ET10 pinout for outputs is shown below

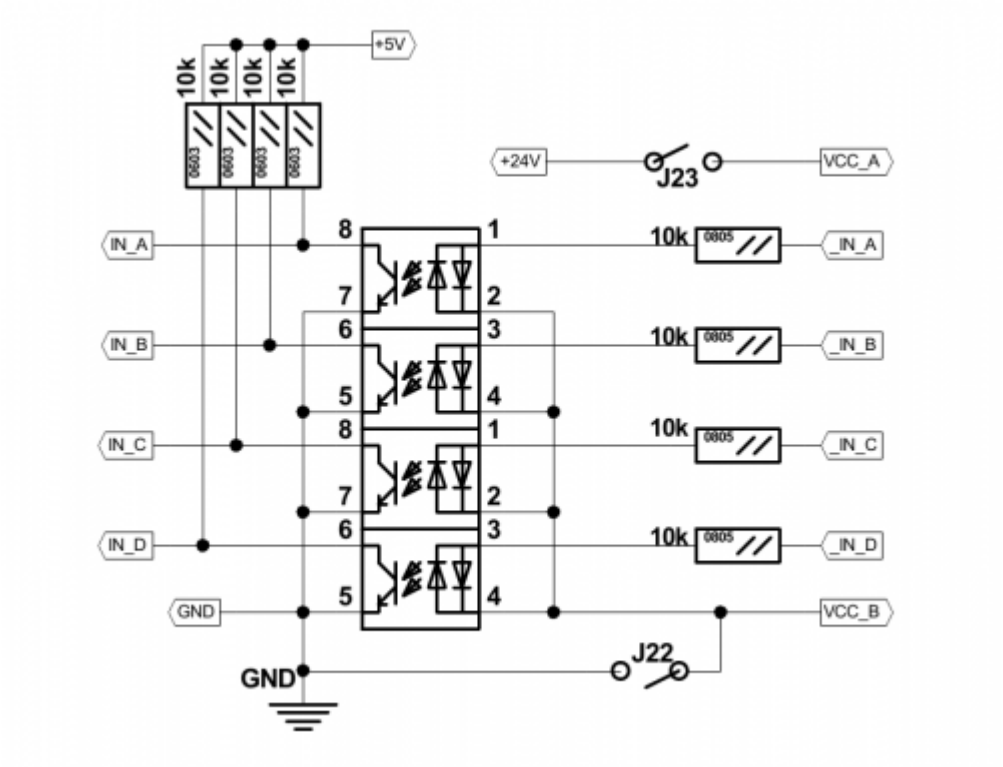


There are LED indicators for each Output and PWM pin on the ET10 board to control actual Output/PWM state. LEDs are highlighted in a picture below.



Galvanic isolated inputs

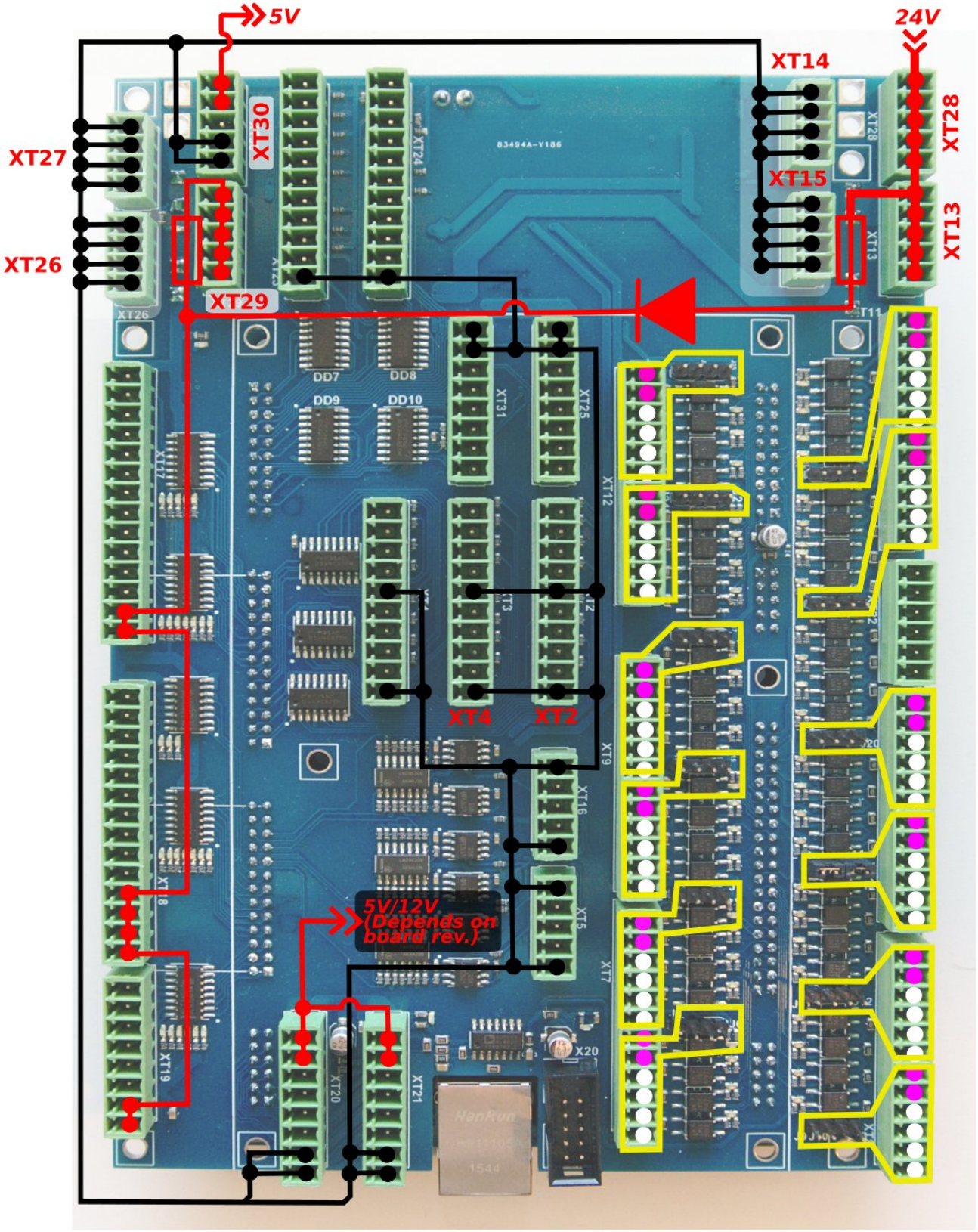
The ET10 control board has 48 galvanic isolated binary inputs, 12 groups of 4 inputs each. Each group has a common LED wire and separate power supply pins so inputs can be powered from different power sources. Using PNP and NPN sensors simultaneously is possible too. Schematic of the 4 inputs group is shown in a picture below.

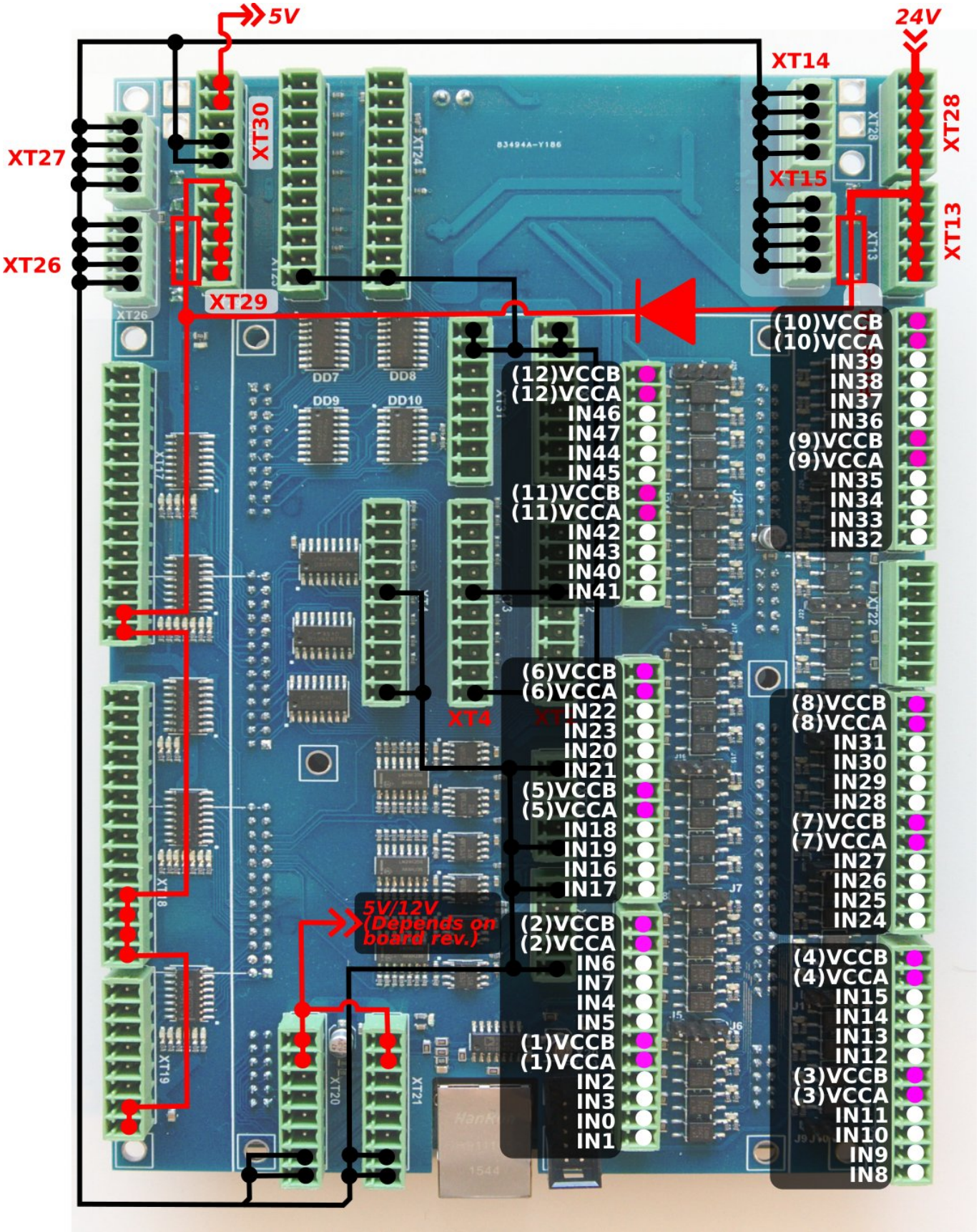


Wires VCCB(common wire) and VCCA are used for external power supply connection. Beside external power supply, internal +24V DC can be used to supply input LEDs, if correspondence jumpers are closed.

```
WARNING: If an external Power supply is used, correspondence jumpers for the group should be OPEN
```

Jumpers to use the internal power supply for each 4-inputs group are shown on a picture below


5V
24V
XT14
XT28
XT27
XT30
XT15
XT13
XT26
XT29
XT4
XT2
5V/12V
(Depends on
board rev.)



Connection Examples -

3-wire NPN sensor connection example

```
Jumpers are open.
```





3-wire PNP sensor connection example

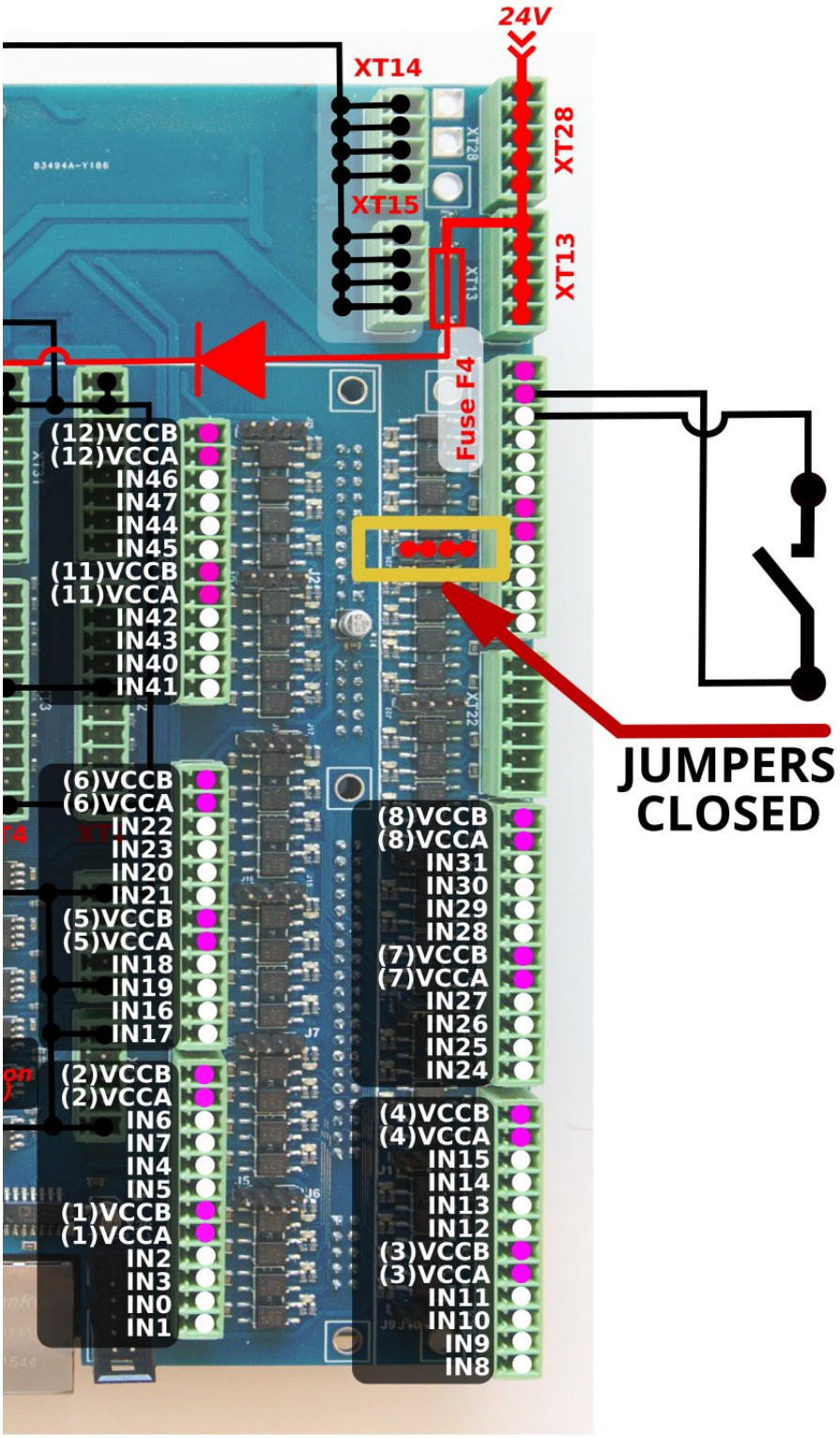
```
Jumpers are open.
```



Switch connection example

- Internal power supply

  ```
  Jumpers for selected group are  closed.
  ```

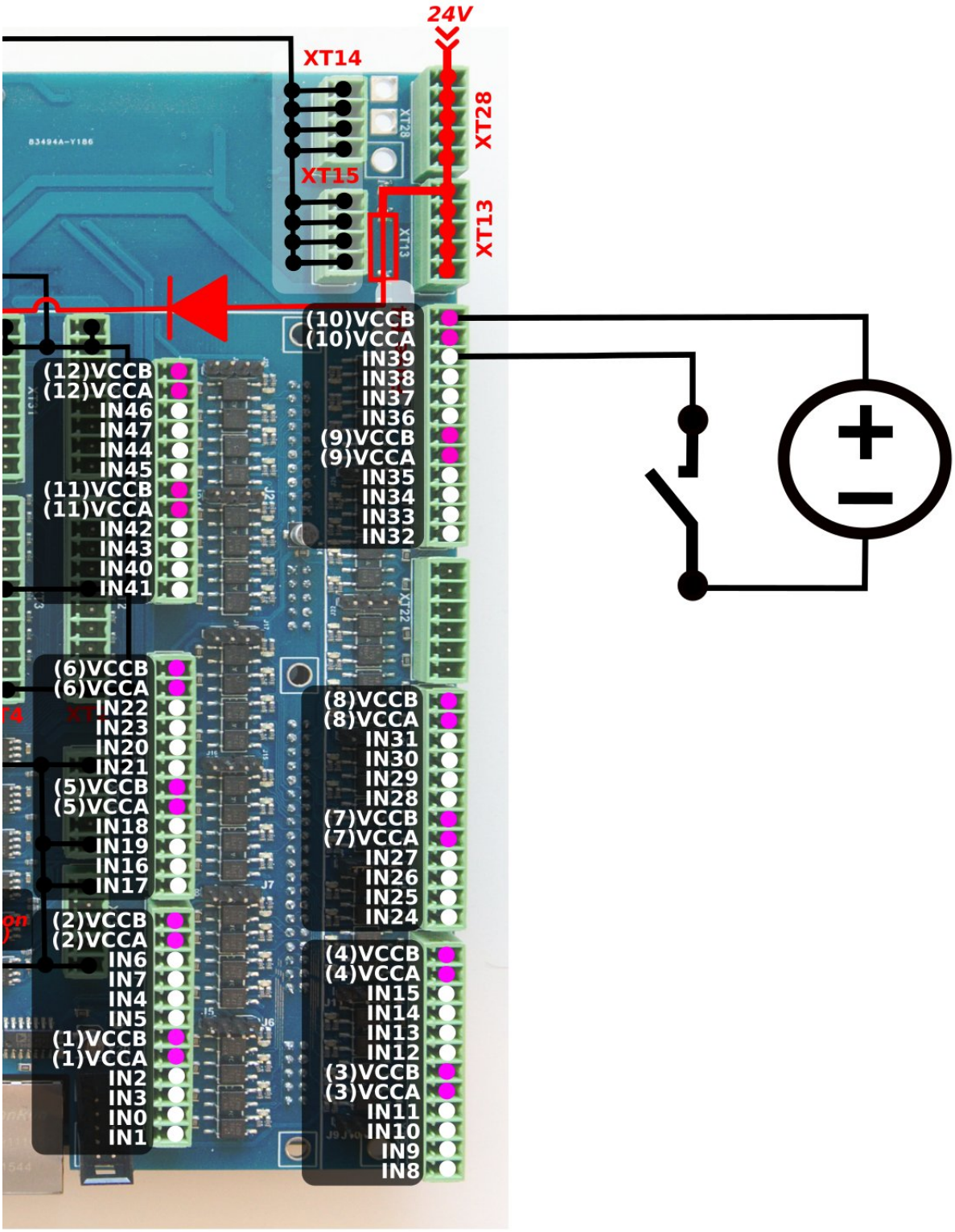


Common wire for 4 optocoupler units is connected to internal GND (0V) if the Jumper is closed. A switch should short another optocoupler input to +24V to activate input pin.

Jumper should be closed to connect the optocoupler pin to +24V. A switch should short wire to GND(0V).

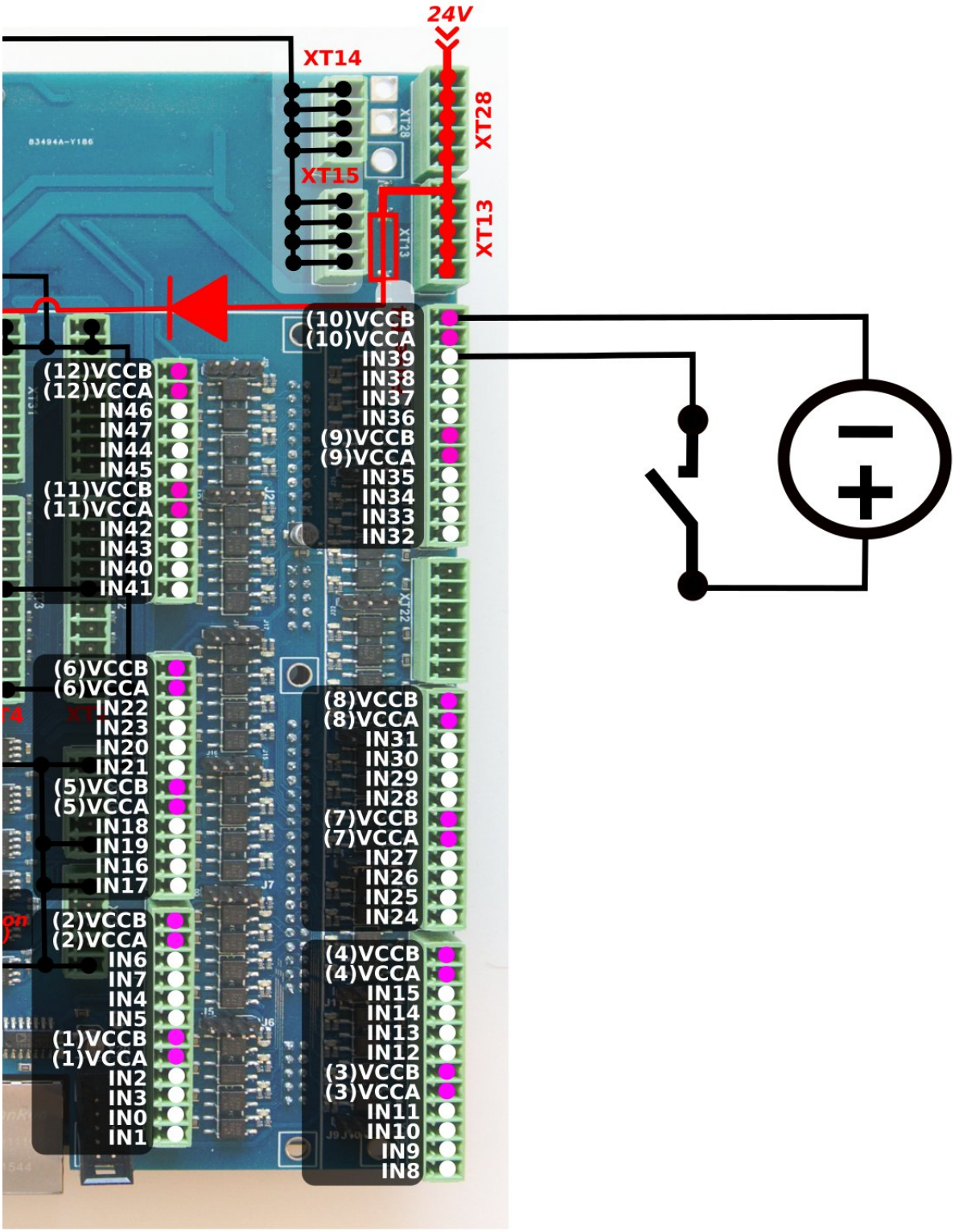
- External power supply (#1)

```
JUPMERS ARE OPEN
```



- External power supply (#2)

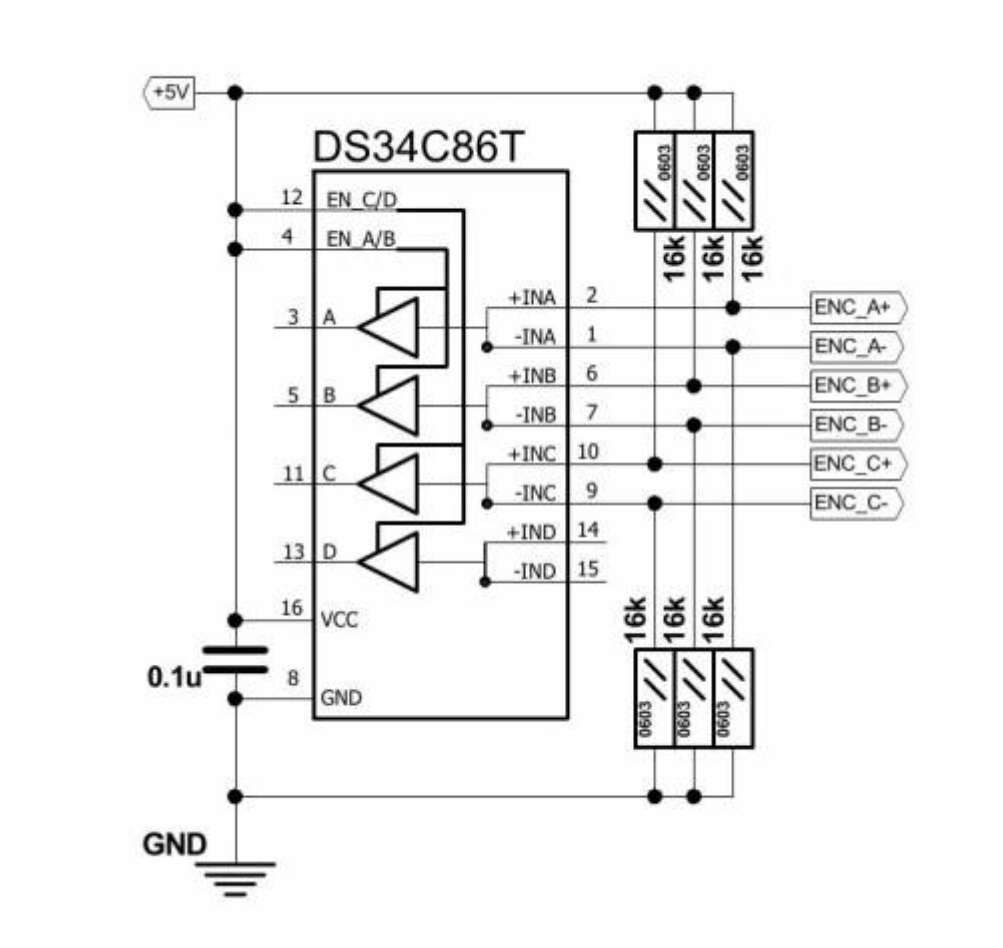
```
JUPMERS ARE OPEN
```



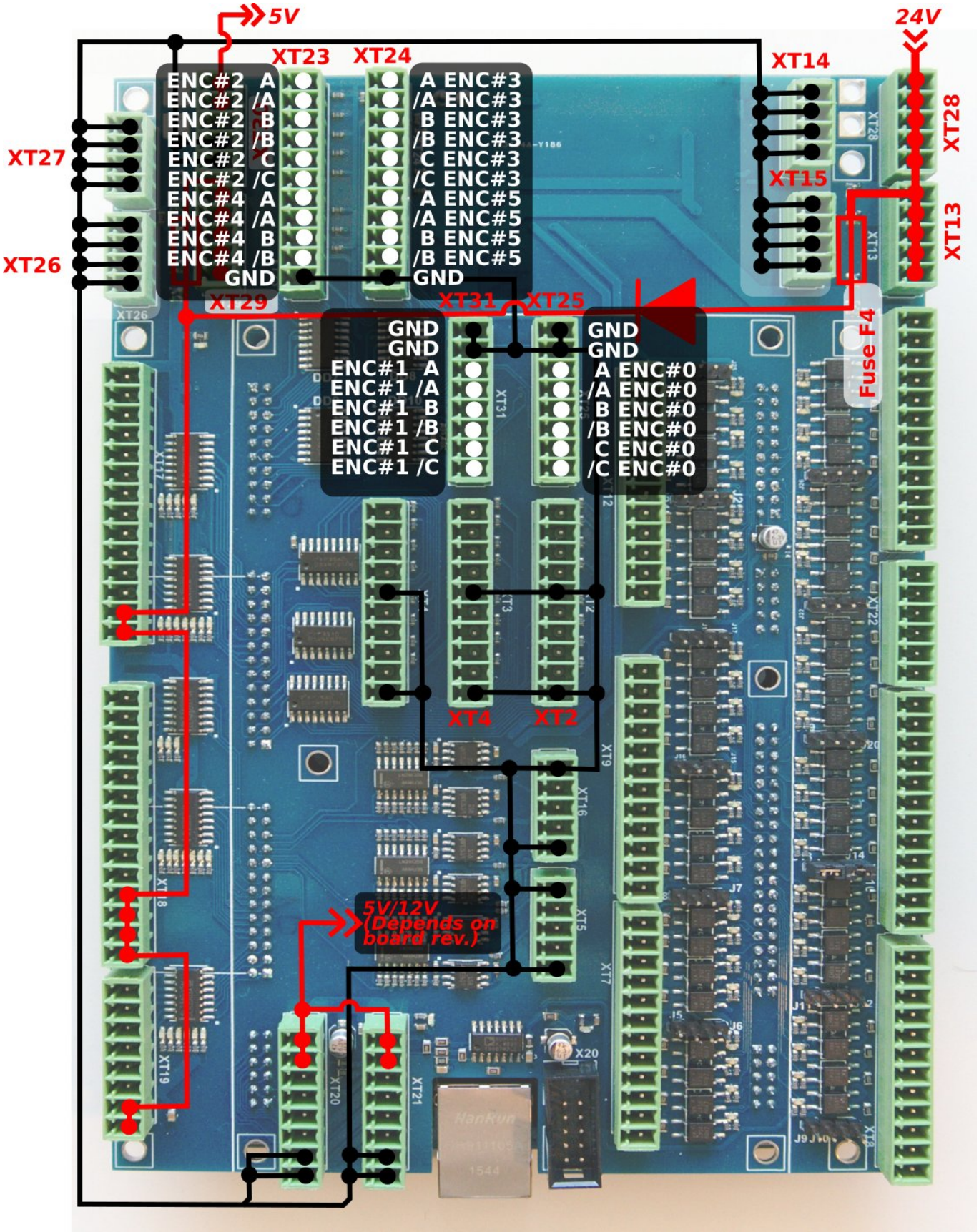
ET10 Encoder inputs

ET10 board has 6 Incremental encoder inputs. There are 4 complete ABC encoder inputs (A/B quadrature encoder signals and Z signal) and 2 reduced AB encoder inputs. ET10 encoder inputs conform RS422 standard and compatible with most of the servo drivers and line driver incremental encoders. 34C86 chip is used in ET10 as a receiver of encoder signals. Internal schematic for line driver encoder inputs is shown on a picture below.

INCREMENTAL ENCODER inputs schematic (1 Encoder, ABC signals are shown)



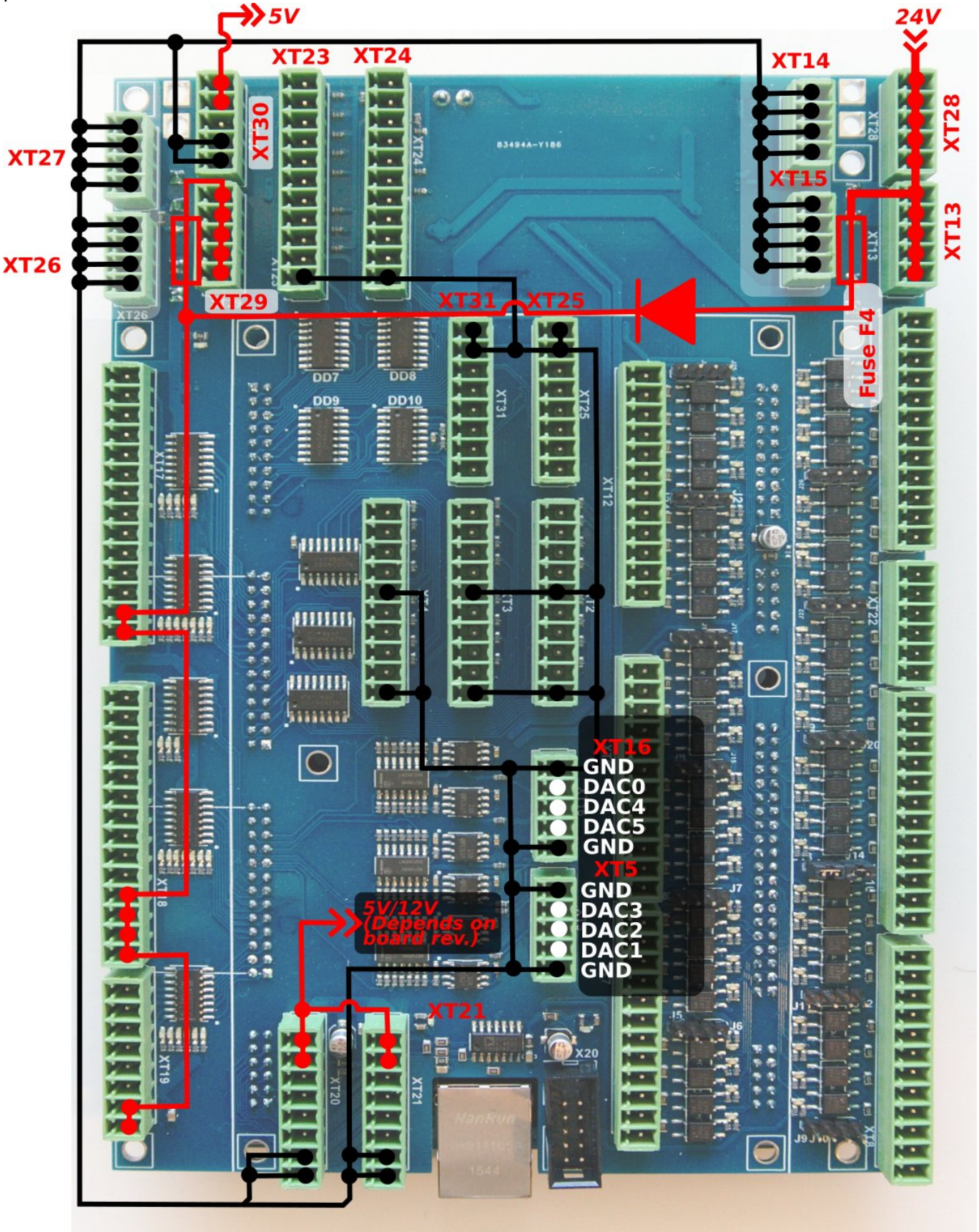
ENCODERS channels 0,1,2,3,4,5 pinout



ET10 DAC +/-10V DAC outputs

ET10 control board contains 6 channel +/-10V DAC outputs. This outputs can be used for analogue servo drivers closed-loop control, spindle speed control or any other application that needed in analogue signals in +/-10V range.

Connectors XT16 and XT5 are used to connect DAC outputs. The connectors pinout are shown in a picture below



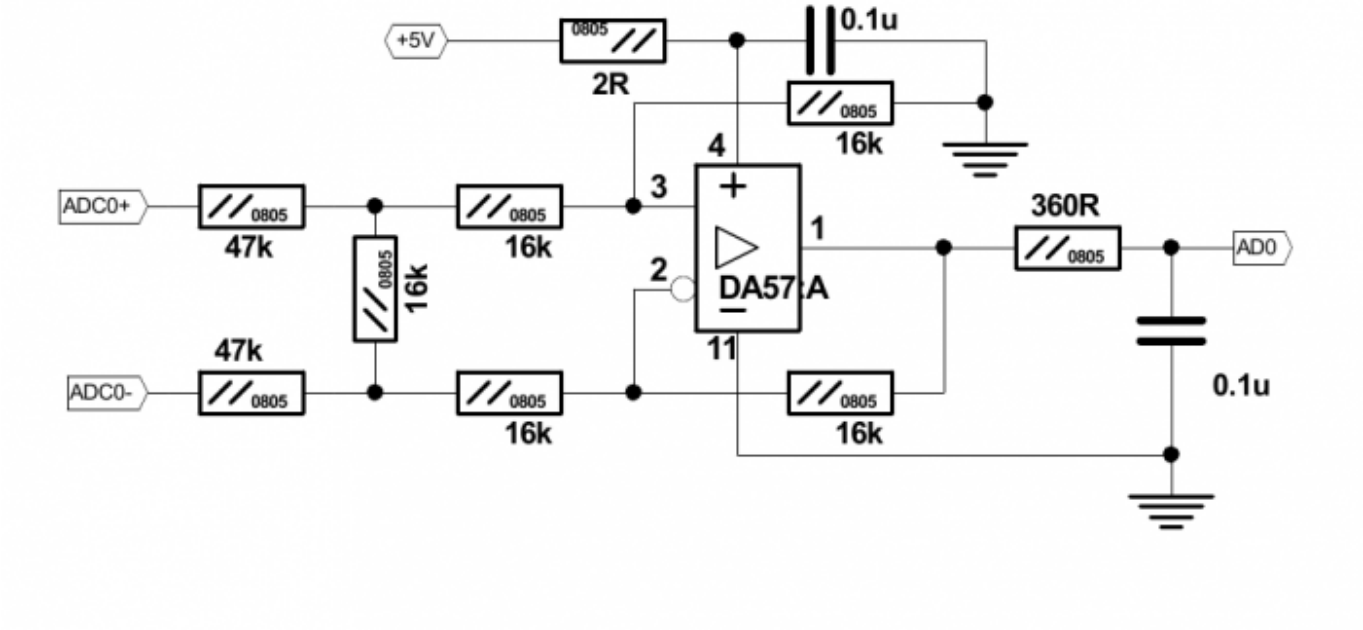
Please check if the DACs are not in the test mode before using.

Spindle Speed control over DAC (0-10V) output

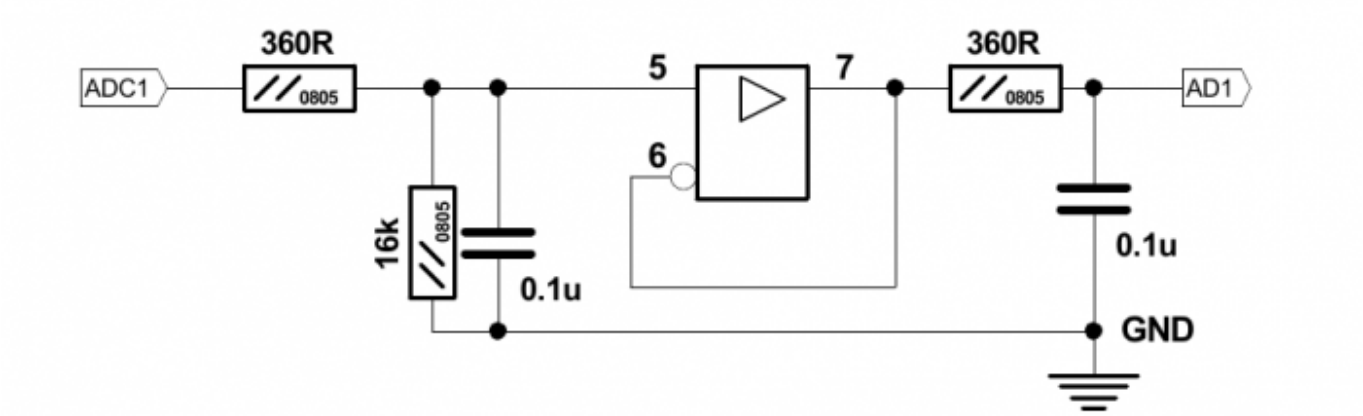
ADC Inputs

myCNC-ET10 Control board has 8 ADC inputs. ADC Channel #0 has differential amplifier input pins and suitable to connect differential analogue signals up to 30V range. The rest 7 of ADC inputs are 0…5V Range. ADC inputs connectors have also GND and +12V DC output pins for convenient potentiometer connection.

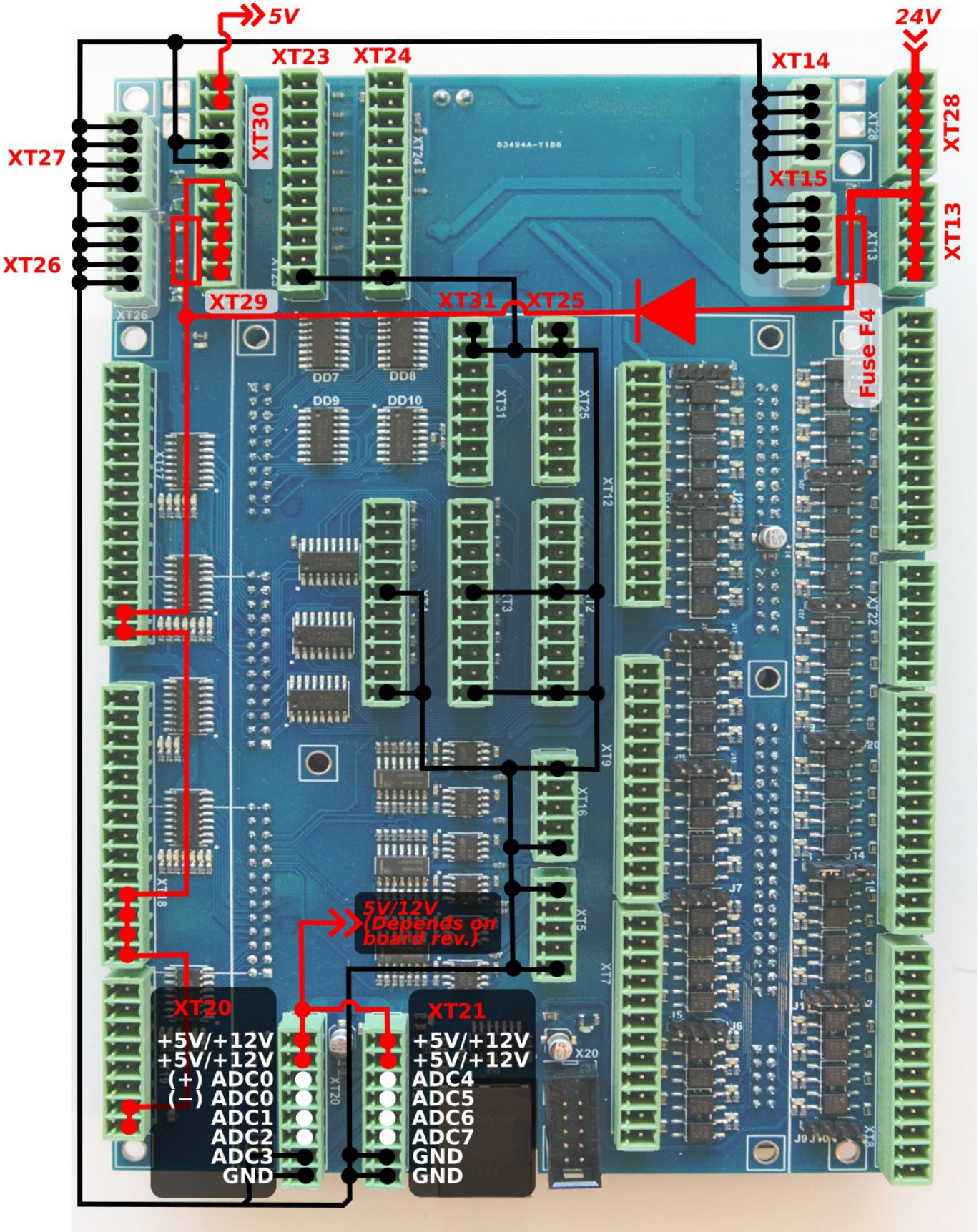
Input schematic of ET10 differential ADC input (Channel#0) is shown below.



Input schematic for ET10 0-5V ADC inputs (Channels#1…#7)



Connectors XT20, XT21 are used to connect ADC inputs. The connector pinout is shown below

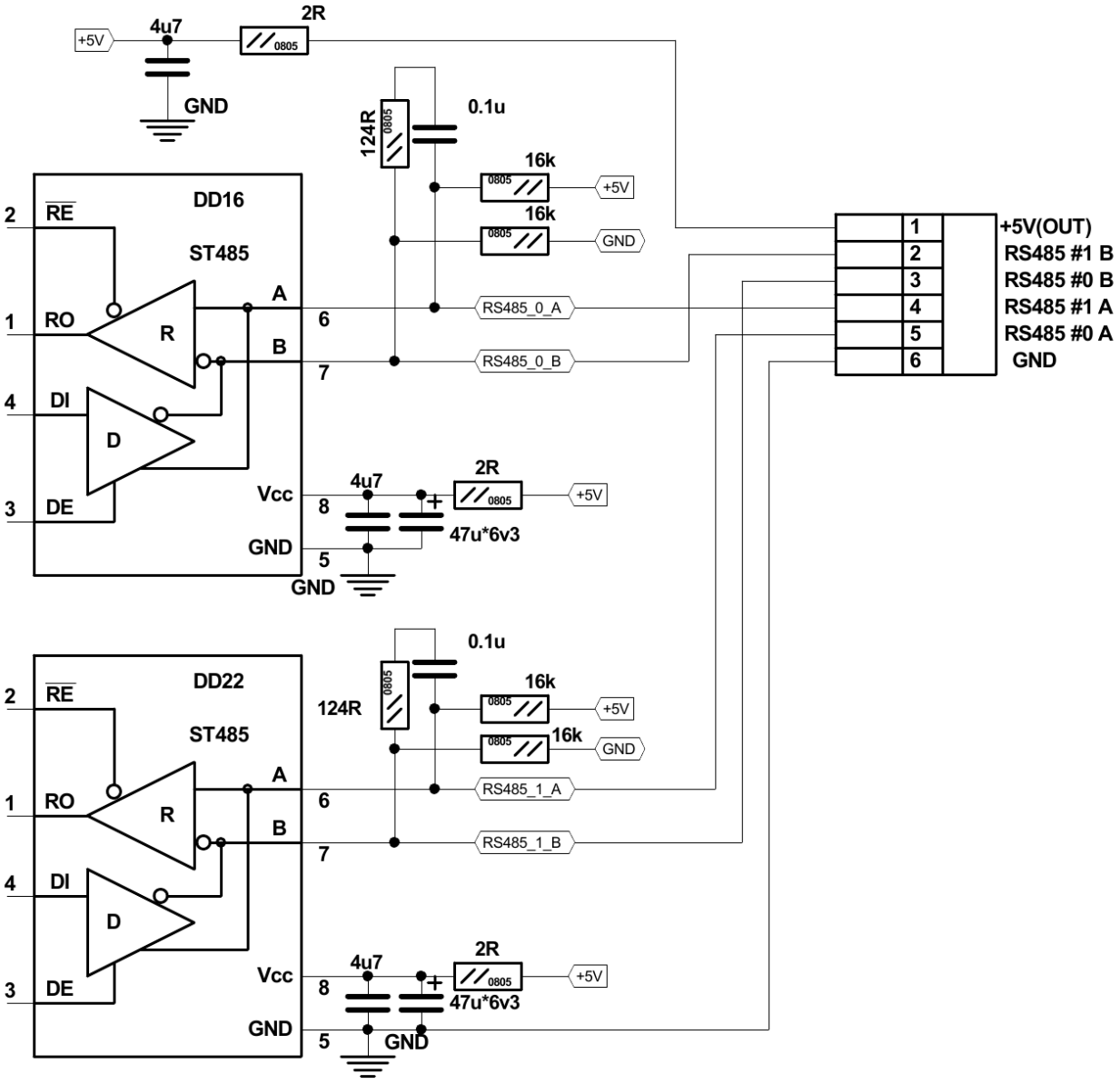


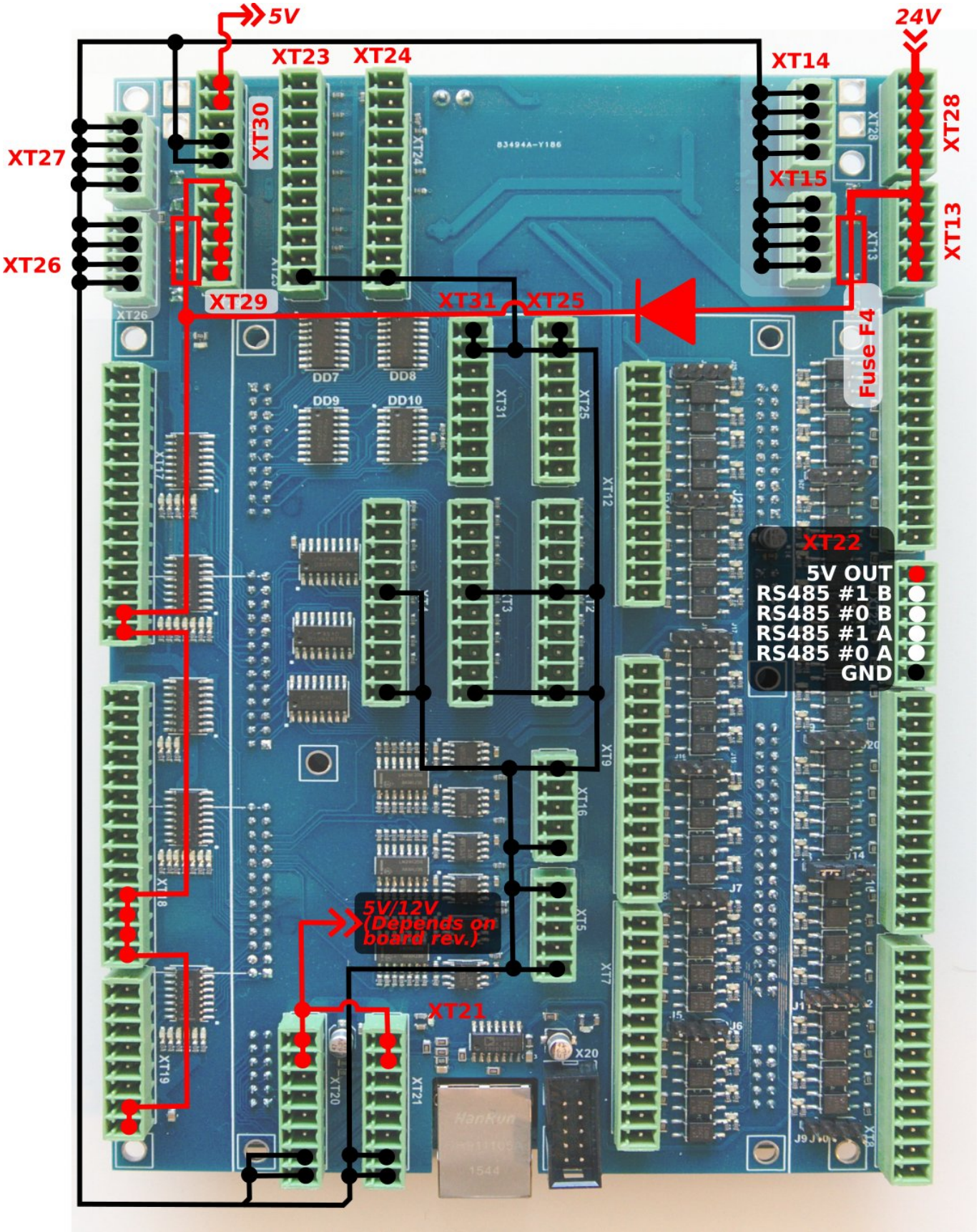
The picture below shows an example of a potentiometer connected to ADC2 input.

RS422/RS485 Bus

Mycnc-Et10 control board has RS422/RS485 bus connector. Modbus ASCII/RTU and Hypertherm Serial

communication interfaces are implemented in myCNC-ET10 control board. RS422 connector pinout shown below



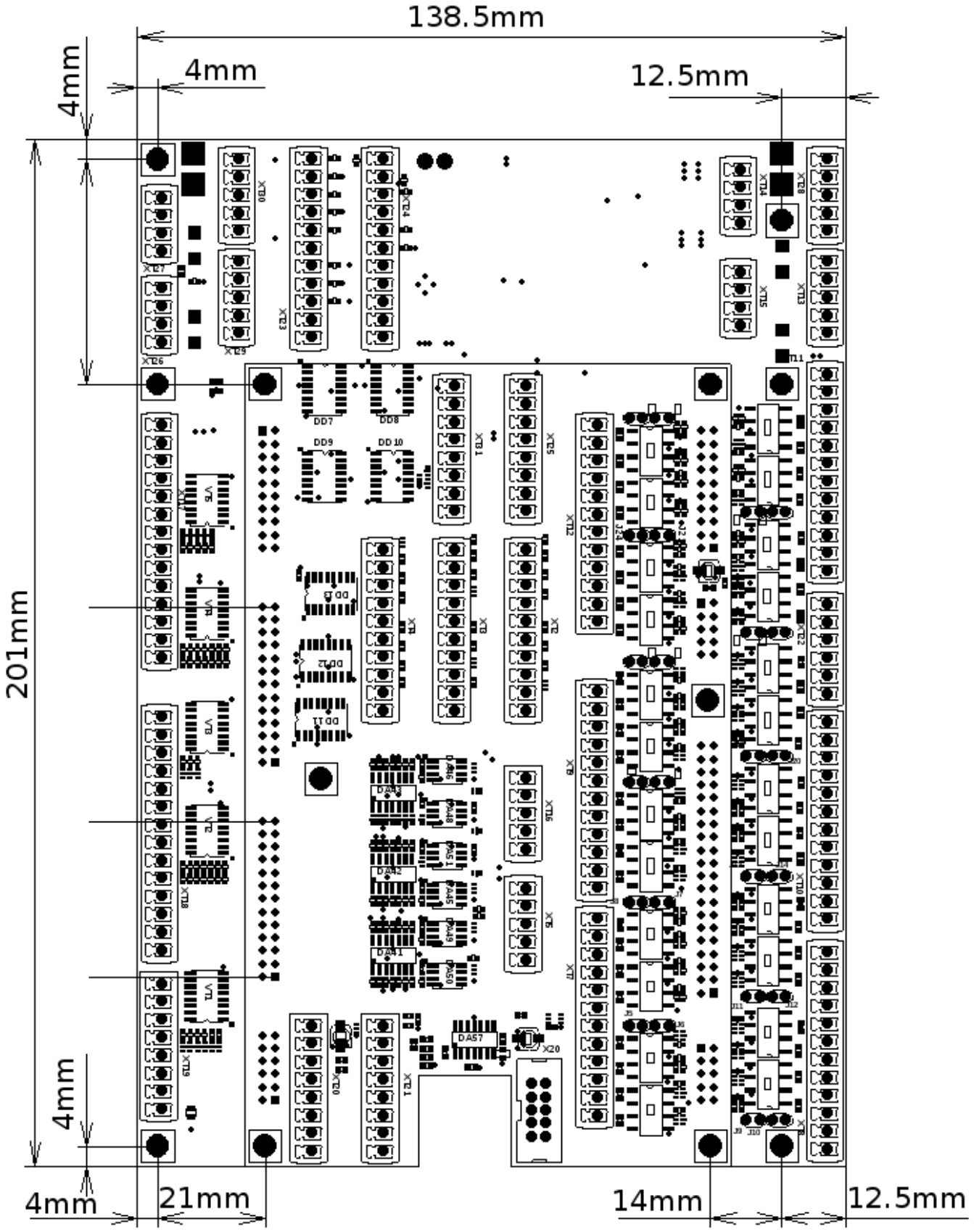


Board dimension

myCNC-ET10 breakout board dimension

PDF: http://cnc42.com/downloads/et10bb-r9.pdf

DXF: http://cnc42.com/downloads/et10bb-r9.dxf



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