

HAM radio controller for the Raspberry PI

Analog inputs

4x analog universal inputs
2x NTC temperature measurement input
1x current measuring input (high side)
1x voltage measurement input

Universal inputs:

the measuring range is 0 to 3.3 volts and can be expanded with an optional resistor. For this purpose, the input resistor R64 (1k) forms a divider with the optional R68.

For a measuring range of 0 - 5 volts: R68 is equipped with 1.8kOhm (results in a measuring range of 0 - 5.13V)

Temperature - measuring inputs:

these are provided as standard for an NTC type: B57703M103G. When using other NTCs, R71 or R72 may have to be changed

Current / voltage measurement input:

it is a high-side detector, i.e. the current is measured in the positive line. A shunt resistor (e.g. 1 milliohm) is inserted into the positive line (e.g. between power supply unit and consumer). The voltage drop across the shunt is fed to the detector via ST9.

The measured voltage corresponds to the voltage drop across the shunt x 20.

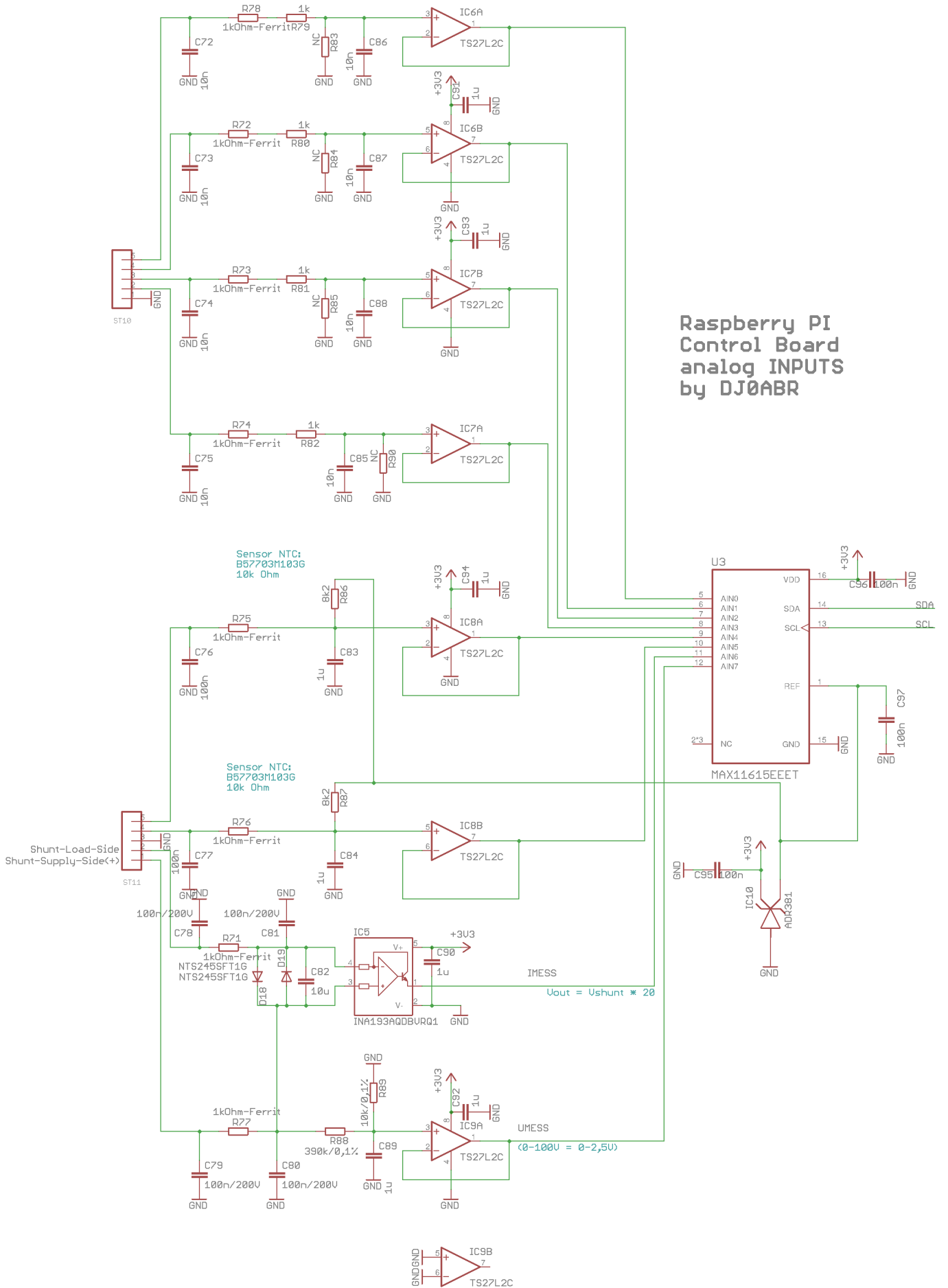
Example:

Shunt: 1mOhm Electricity: 20 amps

a voltage of $1\text{mOhm} \times 20\text{A} = 20\text{mV}$ drops at the shunt. The voltage to be measured of $20\text{mV} \times 20 = 0.4\text{V}$ is then present at the detector output.

The input for voltage measurement is wired internally. The voltage at the shunt to ground is measured, which corresponds to the supply voltage of the consumer.

The MAX11615EEET is used as the ADC. This is an 8-channel ADC with 12 bit resolution.



Pin assignment:

ST7:

1. ADCUNIV1 (ADC universal input)
2. ADCUNIV2
3. ADCUNIV3

ST8:

1. ADCUNIV4
2. ADCTEMP1 (temperature input 1)
3. ADCTEMP2

ST9:

1. to the shunt (consumer side)
2. to the shunt (power source side)
3. GND

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