

VOLTCON_HI

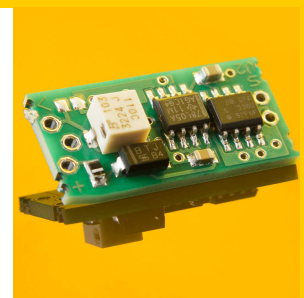
High sensitivity transmitter of photocurrent to a 0-5V signal



The Voltcon converts a photocurrent into an output voltage between 0 and 5V.

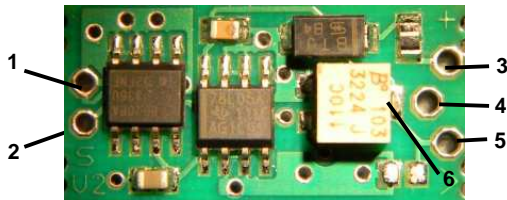
The present module works with a high gain factor and converts a photocurrent of 40nA to an output of 5V. This means, a current higher than 40nA will cause saturation.

Other modules with low gain (VOLTCON_LO, up to 500µA) and medium gain (VOLTCON_MED, up to 5µA) are available. Alternatively, please refer to the below instruction for changing the gain.



Input solder points	Photodiode Anode = positive terminal of the photodiode Photodiode Cathode = negative terminal of the photodiode
Power supply and output terminal solder points	A voltage of 5...24V is to be applied between V+ and GND. The resulting output voltage between 0 and 5V is measured between the signal output and GND. The voltage is proportional to the applied photocurrent.
Dimensions	W x L x H = 13 x 26 x 8mm
Operating temperature	-20...80°C
Storage temperature	-40...80°C
The amplification factor (gain) is adjustable with a potentiometer (see description).	
RoHS-compliant to 2002/95/EG.	

Connection:



Input solder points

- 1 Photodiode anode
- 2 Photodiode cathode

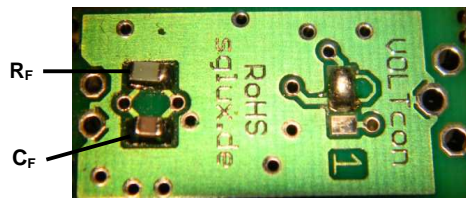
Power supply solder points

- 3 V+ power supply
- 4 GND power supply
- 5 Signal output

Gain fine adjustment:

- The gain fine adjustment is done via the potentiometer (6)
- turn left to raise the gain
 - turn right to lower the gain

How to change the gain:



R_F and C_F might have another appearance than in the picture.
To change the gain (measurement range) in a larger scale, please change the feedback resistor R_F (the present value is 120 MΩ).
To calculate $R_{F_{new}}$ for the new resistor, please use this formula:

$$R_{F_{new}}(\text{in } M\Omega) = 5 / I_{max}(\text{in } \mu A)$$

I_{max} is the max. measurable photocurrent. It is adjustable with the gain potentiometer.
The capacitor C_F (the default value is 820pF) is influencing the time constant τ of the measurement system. The present time constant is approx. 10ms. It is calculated with the formula:

$$\tau(\text{in } ms) = C_F(\text{in } nF) * R_F(\text{in } M\Omega)$$

maximum ratings

$$10k\Omega < R_{F_{new}} < 3G\Omega \text{ and } \tau > 1ms$$