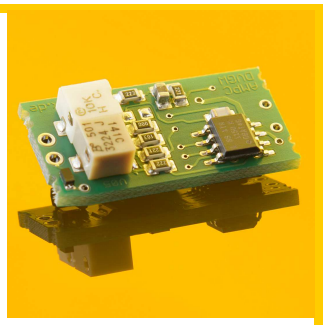
AMPCON_LO

Low sensitivity transmitter of photocurrent to 4-20mA current loop

The AMPCON converts a photocurrent into an output current between 4 and 20mA. The module is designed for integration into 4-20mA databusses.

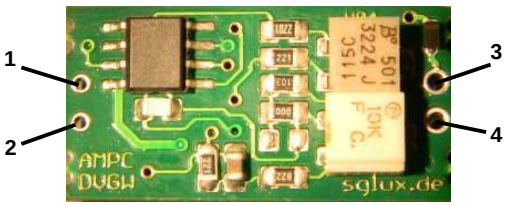
The present module works with a low gain factor and converts a photocurrent of 250µA (adjustable +/-35%) to an output of 20mA. This means, a current higher than 250µA will cause saturation.

Other modules with medium gain (AMPCON_MED, up to 2,5µA) and high gain (AMPCON_HI, up to 18nA) 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 = output terminal solder points	A voltage of 24V is to be applied between V+ and GND. The resulting current between 4 and 20mA is the signal, which is proportional to the photocurrent.
Dimensions	W x L x H = 13 x 26 x 8mm
Operating temperature	-20...80°C
Storage temperature	-40...80°C
The signal offset and the amplification factor are adjustable with potentiometers. (see description)	
RoHS-compliant to 2002/95/EG.	

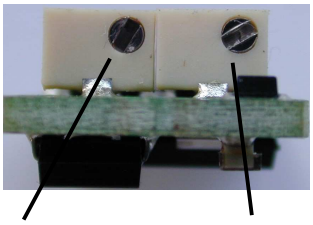
Connection:



Input solder points
1 Photodiode anode
2 Photodiode cathode

Power supply solder points
3 V+ power supply
4 GND power supply

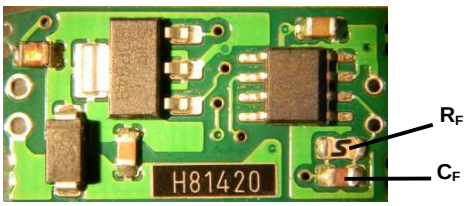
Offset and gain fine adjustment:



gain adjustment
turn left to raise the gain
turn right to lower the gain

offset adjustment
turn right to raise the offset
turn left to lower the offset

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 10 kΩ)
To calculate R_{Fnew} for the new resistor, please use this formula:

R_{Fnew}*(in kΩ)*=2160/I_{max}*(in µA)*

I_{max} is the max. measurable photocurrent. It is adjustable +/- 35% with the potentiometer.
The capacitor C_F (the default value is 1µF) is influencing the time constant τ of the measurement system. The present time constant is 10ms. It is calculated with the formula:

τ*(in ms)* = C_F*(in µF)** R_F*(in kΩ)*

maximum ratings

5kΩ < R_{Fnew}<3GΩ and **τ > 1ms**

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