

# AMPCON series

Transmitter of photocurrent to 4 - 20 mA current loop

## GENERAL FEATURES



### Properties of the AMPCON

The AMPCON converts a photocurrent to an industry standard current loop signal. It exhibits a loop-powered (passive) 4 to 20 mA signal to any PLC system.

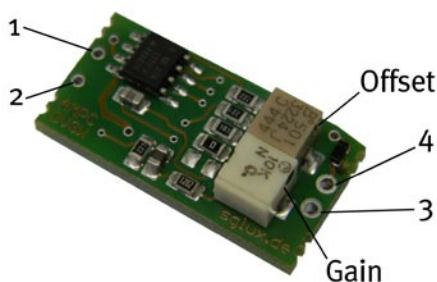
Three models with different measurement ranges are available. Gain and offset can be adjusted by potentiometers. The measurement range can also be customized by replacing passive components (see description on page 2).

## SPECIFICATIONS

Parameter	Value
Photocurrent measurement range	AMPCON_low 250 $\mu$ A
	AMPCON_med 2.5 $\mu$ A
	AMPCON_high 25 nA
Loop supply voltage	(10 to 24) V $\pm$ 10 % depending on loop resistance
Total loop resistance	$\leq$ 700 $\Omega$ @ 24V, $\leq$ 100 $\Omega$ at 10V
Gain adjustment range	$\pm$ 35%
Offset adjustment range	4 mA ( $\pm$ 12.5%)
Current consumption	4 - 20 mA
Dimensions	13 x 26 x 8 mm (WxLxH)
Operating temperature	-20 to +80 $^{\circ}$ C
Storage temperature	-40 to +80 $^{\circ}$ C
Standards	RoHS 2 2011/65/EU, DIN IEC 60381-1

We strongly recommend to process this product on ESD protected workplaces.

## CONNECTION



- 1 - Photodiode anode
  - 2 - Photodiode cathode
  - 3 - Signal output (connect to current input)
  - 4 - V+ power supply
- Gain - turn left to increase the gain  
Offset - turn left to decrease the offset

# AMPCON series

Transmitter of photocurrent to 4 - 20 mA current loop

## ▶ CUSTOMIZATION OF MEASUREMENT RANGE



To modify the measurement range beyond the available adjustment range the feedback resistor  $R_f$  must be replaced. The adjustment range remains unaffected by this change.  $I_{max}$  is the designated maximum photocurrent to be measured.

$$R_{f,new} \text{ (in } M\Omega) = 2160 / I_{max} \text{ (in nA)}$$

The capacitor  $C_f$  defines the time constant  $\tau$  of the measurement and may need modification too. By default  $\tau$  is 10 ms for all models. The required value of  $C_f$  can be calculated from  $R_{f,new}$  and the intended time constant:

$$C_f \text{ (in nF)} = \tau_{new} \text{ (in ms)} / R_{f,new} \text{ (in } M\Omega)$$

### Recommended values:

$10 \text{ k}\Omega \leq R_{f,new} \leq 3 \text{ G}\Omega$  and  $1 \text{ ms} \leq \tau \leq 200 \text{ ms}$ ,  $C_{f,new} \geq 33 \text{ pF}$ ,  
components package 0805 (2.0 x 1.25 mm)

### Default component values:

Model	$R_f$	$C_f$
AMPCON_low	10 k $\Omega$	1 $\mu$ F
AMPCON_med	1 M $\Omega$	10 nF
AMPCON_high	100 M $\Omega$	100 pF

The AMPCON series works with other diodes if shunt resistance and junction capacitance are comparable with sglux SiC photodiodes. Almost all UV and visible photodiodes are known to work while infrared detectors may not work as expected.