

VOLTCON series

Transmitter of photocurrent to 0 - 5 V signal

GENERAL FEATURES



Properties of the VOLTCON

The VOLTCON converts a photocurrent into an output voltage between 0 and 5 V and can be connected to any PLC system.

Four models with different measurement ranges are available. The amplification factor (gain) can be adjusted by a potentiometer. The measurement range can also be customized by replacing passive components (see description on page 2).

SPECIFICATIONS

Parameter	Value
Photocurrent measurement range	VOLTCON_low ($I_{max} = 500 \mu\text{A}$, Gain = 10^4 V/A)
	VOLTCON_med ($I_{max} = 5 \mu\text{A}$, Gain = 10^6 V/A)
	VOLTCON_high ($I_{max} = 50 \text{ nA}$, Gain = 10^8 V/A)
	VOLTCON_intense ($I_{max} = 500 \text{ pA}$, Gain = 10^{10} V/A)
Supply voltage	7* ... 24 V (*usable down to 5V, but this is not recommended)
Gain adjustment range	$\pm 35\%$
Dark output voltage	< 1 mV
Current consumption	< 30 μA
Dimensions	13 x 26 x 8 mm (WxLxH)
Operating temperature	-20 ... +80 °C
Storage temperature	-40 ... +80 °C
Standards	RoHS 2 2011/65/EU, DIN IEC 60381-2

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

CONNECTION



- 1 - Photodiode anode
- 2 - Photodiode cathode
- 3 - Voltage output
- 4 - GND power supply
- 5 - V+ power supply

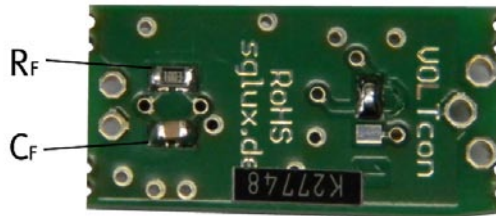
Gain - turn left to increase the gain

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CUSTOMIZATION OF MEASUREMENT RANGE

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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.

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

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

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

Recommended values:

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

Default component values:

Model	R_f	C_f
VOLTCON_low	10 k Ω	1 μ F
VOLTCON_med	1 M Ω	10 nF
VOLTCON_high	100 M Ω	100 pF
VOLCON_intense	10 G Ω	1.5 pF

The VOLTCON 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.