LABOR – ASTER

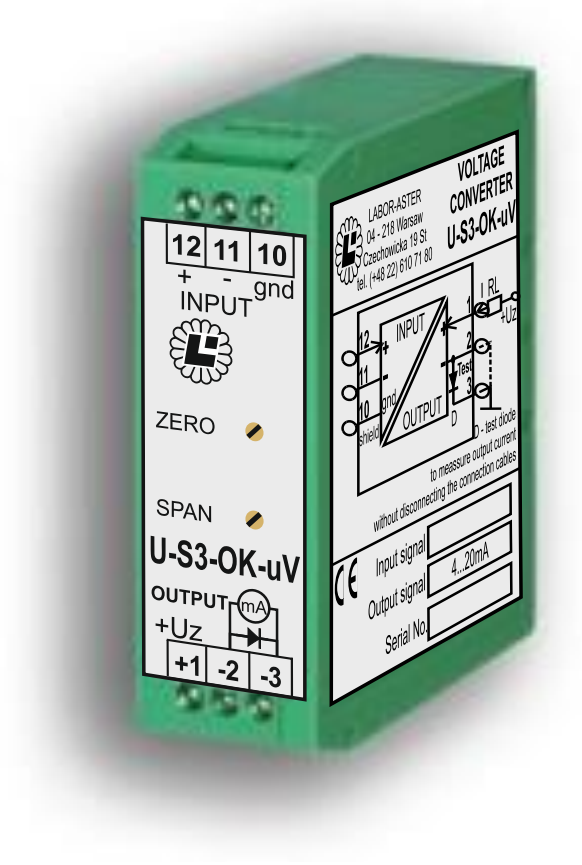
INDUSTRIAL AUTOMATION

TWO-WIRE VOLTAGE CONVERTER FOR CATHODIC PROTECTION
Type U-S3-OK-uV

- **Measurement of small currents Imin=0.1μA$_{dc}$ and small voltages Umin=10μV$_{dc}$ designed especially for control of cathodic protection of pipelines in particular.**
- **Full galvanic separation of the circuits.**

APPLICATION

Converter **U-S3-OK-uV** is designed to convert small increases of voltage or current DC U≥10μV, I≥0.1μA to current signal 4...20mA.
On the side wall of the device is a switch which decreases the input sensitivity 10 and 100 times.
Description of the switch positions is on fig. 3. The converter is designed especially for control of cathodic protection of pipelines in particular with using switch-off-and-on method measuring voltage drop on pipe section. **This method does not require 10MΩ input resistance of the converter.**
The user can calibrate the beginning and the span of the range by potentiometers (ZERO and SPAN) which are placed on the front panel of the converter.
The user has the possibility to control the output current (without disconnecting the connection cables) by connecting the ammeter as in Fig.2b.



BASIC TECHNICAL PARAMETERS

Input signal	voltage	-	ΔUmin=10μVdc, typically (-100μVdc…+100μVdc)
	current	-	ΔI_{min}=1μAdc,
Input resistance			
	voltage input	-	≥250kΩ
	current input	-	50Ω
Output signal		-	current loop 4...20mA powered by external voltage Uz
Supply voltage of the output circuit (Uz)		-	9...36V
Load resistance		-	max 1350Ω (Uz-9V)/20mA
Output current max		-	35mA
Class for voltages and currents			
	U>1mV, I>10μA	-	0.2%
	U<1mV, I<10μA	-	0.5%
Nonlinearity for voltages and currents			±0.05 %
Temperature drift			
	for input ±10μVdc	-	0.03%/°C
	for ΔI≤10μA,ΔU≤1mV	-	0.02%/°C
	for ΔI>10μA, ΔU>1mV	-	0.01%/°C
Time constant		-	0.2s (or according to the order from range 0.001...1s)
Galvanic separation		-	2kV, 50Hz between all circuits
Housing		-	rail 22.5mm IP40
Mounting		-	universal rail latch

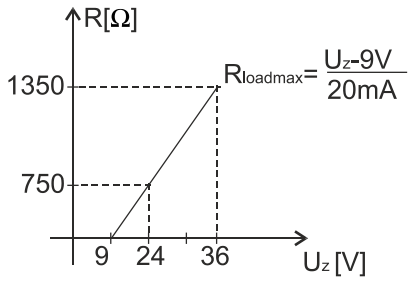


Fig.1 Method of determining the load resistance of a converter U-S3-OK-uV

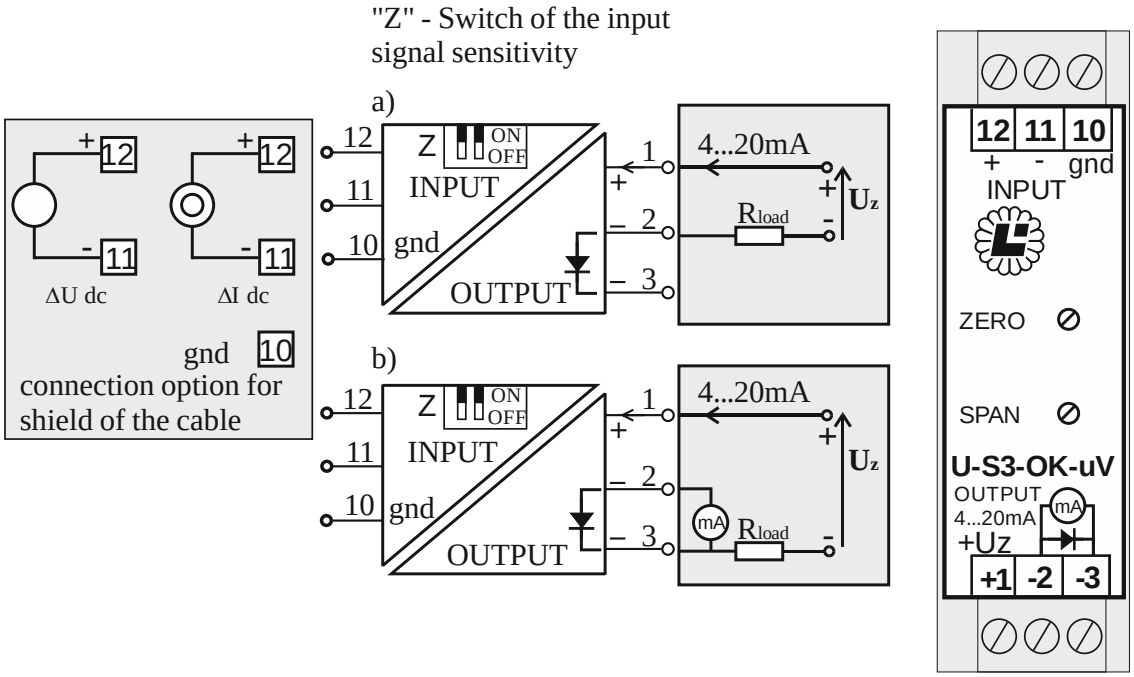


Fig.2 Functional diagram of the U-S3-OK-uV converter and terminals description
a). connection of the converter without measuring the output current
b). connection of the converter with measuring the output current
Switcher available depending on the version.

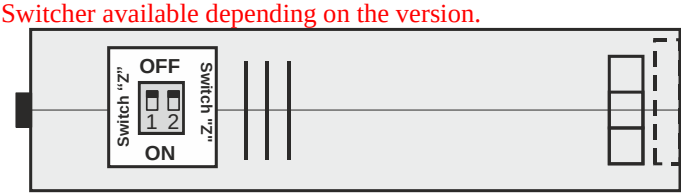


Fig.3 Switch „Z" view which switches sensitivity of the input signal according to Table 1

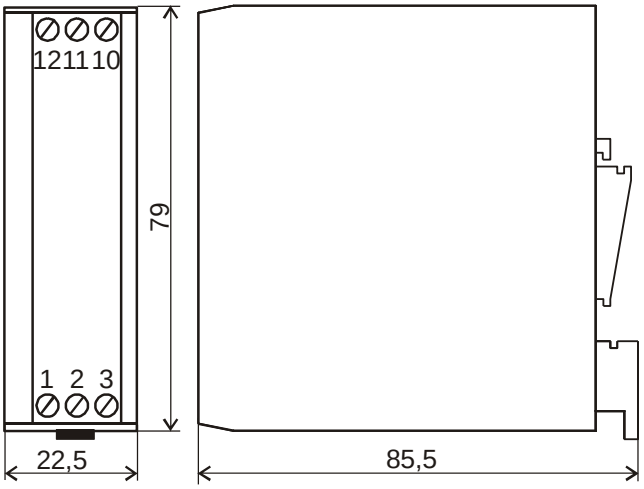


Fig.4 Dimensions of converter housing U-S3-OK-uV

HOW TO ORDER :

Input range:
- range of the measured voltage,

a) without switcher, e.g.:
0...+10µV
-10...+10µV
0...+100µV
-100...+100µV
0...+1mV
-1...+1mV
0...+10mV
-10...+10mV
or other (describe)

b) with switcher, e.g.:
0...+10µV / 0...+100µV / 0...+1mV
-10...+10µV / -100...+100µV / -1...+1mV
0...+100µV / 0...+1mV / 0...+10mV
-100...+100µV / -1...+1mV / -10...+10mV
or other (describe)

Order example:
Voltage converter, input (-100µVdc….+100µVdc)
type: **U-S3-OK-uV-(-100µVdc….+100µVdc)**

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