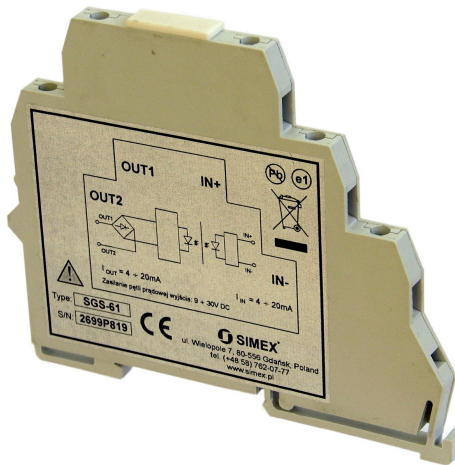


# User manual

# GALVANIC SEPARATOR

# SGS-61

- Input type: 4-20 mA
- Supply from current loop



Read the user's manual carefully before starting to use the unit or software.  
Producer reserves the right to implement changes without prior notice.

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### **Explanation of symbols used in the manual:**



- This symbol denotes especially important guidelines concerning the installation and operation of the device. Not complying with the guidelines denoted by this symbol may cause an accident, damage or equipment destruction.

**IF THE DEVICE IS NOT USED ACCORDING TO THE MANUAL THE USER IS RESPONSIBLE FOR POSSIBLE DAMAGES.**



- This symbol denotes especially important characteristics of the unit. Read any information regarding this symbol carefully

## **1. BASIC REQUIREMENTS AND USER SAFETY**



- **The manufacturer is not responsible for any damages caused by inappropriate installation, not maintaining the proper environmental conditions and using the unit contrary to its assignment.**
- Installation should be conducted by qualified personnel . During installation all available safety requirements should be considered. The fitter is responsible for executing the installation according to this manual, local safety and EMC regulations.
- The unit must be properly set-up, according to the application. Incorrect configuration can cause defective operation, which can lead to unit damage or an accident.
- **If in the case of a unit malfunction there is a risk of a serious threat to the safety of people or property additional, independent systems and solutions to prevent such a threat must be used.**
- Neighbouring and connected equipment must meet the appropriate standards and regulations concerning safety and be equipped with adequate overvoltage and interference filters.
- **Do not attempt to disassemble, repair or modify the unit yourself. The unit has no user serviceable parts. Defective units must be disconnected and submitted for repairs at an authorized service centre.**



- In order to minimize fire or electric shock hazard, the unit must be protected against atmospheric precipitation and excessive humidity.
- Do not use the unit in areas where there is risk of explosions.
- Make sure that the ambient temperature (e.g. inside the control box) does not exceed the recommended values. In such cases forced cooling of the unit must be considered (e.g. by using a ventilator).



**The unit is designed for operation in an industrial environment and must not be used in a household environment or similar.**

## **2. GENERAL CHARACTERISTICS**

Separator is designed for galvanic isolation input current signal from output current signal. Both (input and output) currents ranges are 4÷20mA. Input circuit is supplied from current loop, but output current loop needs external supply 9÷30V DC. Two potentiometers available after removing a small cap from the front of the device, allow to trim output current for application demands. Narrow housing allows mounting the device on DIN 35mm rail.

### **3. TECHNICAL DATA**

#### **Input loop**

Current	$4 \div 20 \text{ mA}$ ; $I_{IN \text{ MIN}} = 3,9 \text{ mA}$ ; $I_{IN \text{ MAX}} = 24 \text{ mA}$
Voltage drop	max. 5,5V
Supply type	from current loop

#### **Output loop**

Current	$4 \div 20 \text{ mA}$ ; $I_{OUT \text{ MIN}} = 3,9 \text{ mA}$ ; $I_{OUT \text{ MAX}} = 24 \text{ mA}$
Current loop supply	$9 \div 30 \text{ V DC}$ (any polarisation on OUT1, OUT2)
Max load resistance	max. $1\text{k}\Omega$ (for supply: $30\text{V} / I_{OUT} = 20 \text{ mA}$ ), [ $R_{O, \text{MAX}} = (U_{\text{supply}} - 9\text{V}) / I_{OUT}$ ]

#### **Other**

Transmittance factor	$K_I = I_{OUT} / I_{IN} = 1$
Separation	galvanic separation between input and output loop
Insulation voltage	750V
Temperature stability	0,05 % / °C
Bandwith (3dB)	200 Hz
Protection level	IP 20
Housing type	DIN rail mounted (35 mm rail)
Housing dimensions	80 x 6,1 x 93,8 mm
Weight	35 g
Operating temperature (depending on version)	0°C to +50°C or -20°C to +50°C
Storage temperature (depending on version)	-10°C to +70°C or -20°C to +70°C
Screws tightening max. torque	0,5 Nm
Max. connection leads diameter	2,0 mm <sup>2</sup>
EMC	according to: PN-EN 61326-1



Isolation between primary and secondary circuit is only functional isolation and can't be use as protection against electric shock.



**This is a class A unit. In housing or a similar area it can cause radio frequency interference. In such cases the user can be requested to use appropriate preventive measures.**

## **4. DEVICE INSTALLATION**

The unit has been designed and manufactured in a way assuring a high level of user safety and resistance to interference occurring in a typical industrial environment. In order to take full advantage of these characteristics installation of the unit must be conducted correctly and according to the local regulations.



- Installation should be conducted by qualified personnel .
- Read the basic safety requirements on page 3 prior to starting the installation.
- All installation works must be conducted with a disconnected power supply.
- Installation should be made in order to requirements in 4.3.

### **4.1. UNPACKING**

After removing the unit from the protective packaging, check for transportation damage. Any transportation damage must be immediately reported to the carrier. Also, write down the unit serial number on the housing and report the damage to the manufacturer.

Attached with the unit please find:

- user's manual,
- warranty,

## 4.2. ASSEMBLY



- Disconnect the power supply prior to starting assembly.
- Check the correctness of the performed connections prior to switching the unit on.

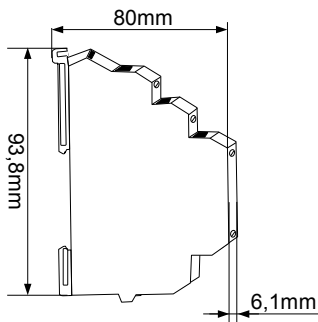


Figure 4.1. Housing dimensions

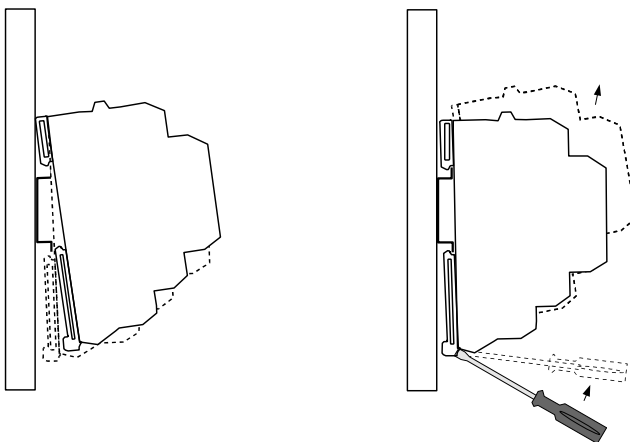


Figure 4.2. Method of mounting / demounting on DIN rail.

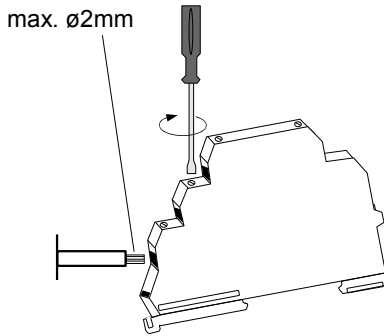


Figure 4.3. Method of cable connecting.



The device should not be used while strong vibrations occurs, and must not be used for security systems.

### **4.3. CONNECTION METHOD**

#### **Caution**



- Installation should be conducted by qualified personnel . During installation all available safety requirements should be considered. The fitter is responsible for executing the installation according to this manual, local safety and EMC regulations.
- Wiring must meet appropriate standards and local regulations and laws.
- Tighten the clamping screws. The recommended tightening torque is 0.5 Nm. Loose screws can cause fire or defective operation. Over tightening can lead to damaging the connections inside the units and breaking the thread.

**Due to possible significant interference in industrial installations appropriate measures assuring correct operation of the unit must be applied. To avoid the unit of improper indications keep recommendations listed below.**

- Avoid common (parallel) leading of signal cables and transmission cables together with power supply cables and cables controlling induction loads (e.g. contactors). Such cables should cross at a right angle.
- Contactor coils and induction loads should be equipped with anti-interference protection systems, e.g. RC-type.
- In the case of magnetically induced interference the use of twisted couples of signal cables (so-called "spirals") is recommended. The spiral (best if shielded) must be used with RS-485 serial transmission connections.

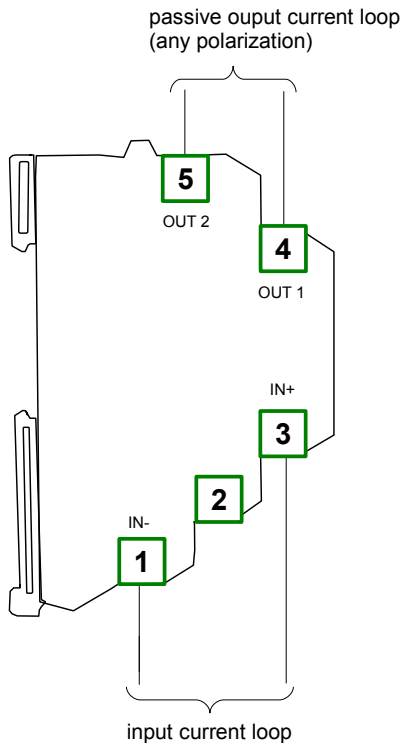


Figure 4.4. Terminals description.

Input current loop signal (range 4÷20mA) should be connected to connectors **IN+**, **IN-**. Proper polarization of signal is essential. Output - passive current loop should be powered by nominal voltage (any polarization) and connected to the output load (Figure 4.4.).



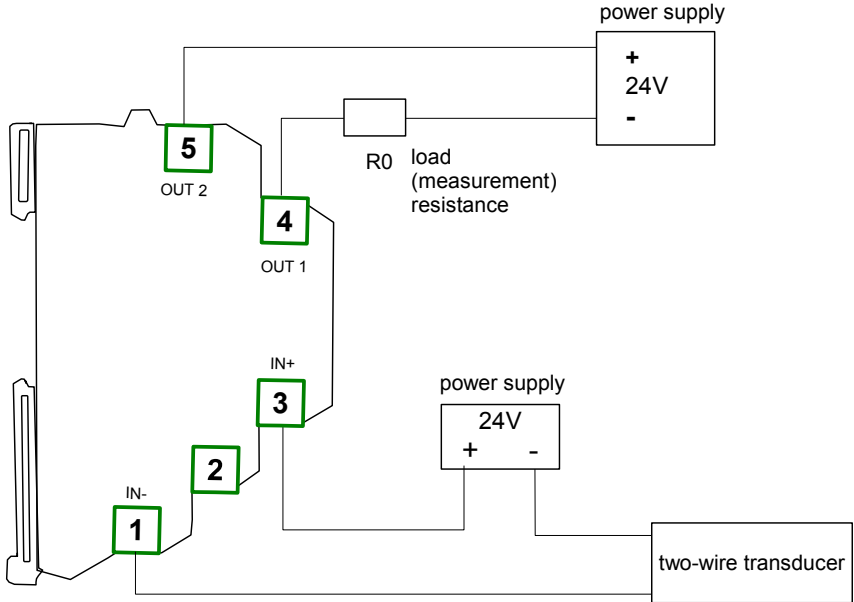


Figure 4.5. Example of device connection.



Signal polarization on input connectors IN+, IN- is fixed.  
Signal polarization on output connectors OUT1, OUT2 is free.

#### **4.3.1. 4.3.1 Calculation of max. permissible load resistance**

Calculation of load resistance  $R_0$  has been made using circuit from Figure 4.5., following signatures has been assumed:

- $U_i$  - minimal current output supply voltage assuring its proper operation,
- $I_{max.}$  - maximal current measured in current loop (20 mA),
- $U_s$  - external power supply voltage (24V).

$$R_{0 \max.} = \frac{U_s - U_i}{I_{max.}}$$

Values  $U_i = 9V$ ,  $I_{max.} = 20 \text{ mA}$  and  $U_s = 24V$  gives:

$$R_{0 \max.} = \frac{24 - 9}{0,02} = 750 \Omega$$

#### **4.4. MAINTENANCE**

The unit does not have any internal replaceable components available to the user. Pay attention to the ambient temperature in the room where the unit is operating. Excessively high temperatures cause faster ageing of the internal components and shorten the fault-free time of unit operation.

In cases where the unit gets dirty do not clean with solvents. For cleaning use warm water with small amount of detergent or in the case of more significant contamination ethyl or isopropyl alcohol.



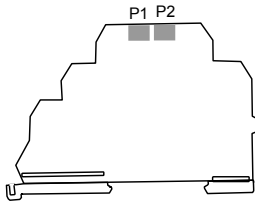
Using any other agents can cause permanent damage to the housing.



Product marked with this symbol should not be placed in municipal waste. Please check local regulations for disposal and electronic products.

## **5. OUTPUT SIGNAL ADJUSTMENT**

After removing a small cap from the front of the device two potentiometers for adjustment output current are available.



*Figure 5.1. Potentiometers location.*

### **Potentiometers description:**

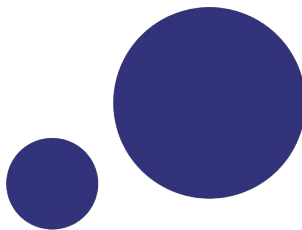
P1 - output current adjustment at  $I_{IN} = 4,00 \text{ mA}$

P2 - output current adjustment at  $I_{IN} = 20,00 \text{ mA}$

After regulation it is recommended to check again indications for 4 and 20 mA.



It is necessary to keep order during regulation: first potentiometer P1, next P2.



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