



# LEVTECH

## User Manual



## Isolated Signal Converter and Splitter LSP-IVCS and LSP-IACS



## Table of Contents

PREFACE.....	3
Document Revisions .....	4
Approvals.....	4
1. INTRODUCTION.....	5
1.1. General Information .....	5
1.2. Support and Services.....	5
1.3. Disposal Remarks.....	5
2. SAFETY INSTRUCTIONS.....	6
2.1.Symbols.....	6
2.2. Receipt and unpacking.....	6
2.3. Environment.....	6
2.4. Mounting.....	6
2.5. Cleaning .....	7
3. DESCRIPTION.....	8
4. FEATURES .....	8
5. INSTALLATION AND WIRING .....	9
5.1. Installation on TS-35 DIN Rail.....	9
5.2. Connections with Screw Terminals.....	9
6. SPECIFICATIONS .....	10
7. CONFIGURATION TYPE AND ORDER CODE.....	11
8. DIMENSIONS.....	11
9. TERMINAL DESIGNATION.....	12
10. ELECTRICAL DIAGRAMS.....	13
11. APPLICATIONS.....	16
12. OPERATION AND MAINTENANCE.....	19
12.1. Operation.....	19
12.2. Maintenance .....	19
13. WARRANTY DISCLAIMER .....	19
14. CONTACT INFORMATION .....	20

## PREFACE

Thank you for selecting our product!

This User Manual contains information needed for proper installation, operation, and maintenance of your product. A thorough understanding of these simple instructions will help you get the most of your product.

This document should be read thoroughly, and the safety instructions described in this manual should be followed carefully. If you have questions or concerns about the operation and maintenance of this product, please contact our customer support.

If a problem arise with the product, check if you followed the installation steps correctly. If the problem persists, contact an authorized Levtech dealer or our customer support.

All information in this User Manual is based on the latest product information available at the time of printing approval. Levtech reserves the right to make changes at any time without notice and without incurring any obligation.

Please always keep this manual together with the isolator as a reference to everyone who uses this product.

## Document Revisions

Date	Version Number	Document Changes
11-03-2021	1.0	Initial draft
13-04-2021	2.0	Overall improvements
15-04-2021	3.0	Application examples added
13-05-2021	4.0	Wiring diagram added
06-11-2023	5.0	Current input resistance modified

## Approvals

This document requires following approvals:

Name	Title
Levi Mihaly	General Manager

# 1. INTRODUCTION

---

## 1.1. General Information

This manual is the designated User Manual for the installation, safe operation, and maintenance of your product. It is divided into nine chapters covering general information, safety instructions, how to safely install and operate the product, maintenance, warranty, and contact information.


All personnel involved in the installation, operation, and maintenance of this equipment should read and understand this manual, particularly its safety instructions. Substandard performance and longevity, property damage, and personal injury may result from not knowing and following these instructions.


In order to ensure long product life, Levtech recommends that you utilize the product and perform maintenance by correctly following the instructions described in this guide. The manufacturer's warranty does not cover any damage resulting from the neglect of these instructions.

Levtech assumes no liability for damage caused by operation contrary to what is specified in this operating manual.

## 1.2. Support and Services

For information about further questions that are not answer in this manual, additional materials, and support, please contact:

 Lueta Nr. 319, Romania

 +40761318594

 office@levtech.ro

 www.levtech.ro

## 1.3. Disposal Remarks

**DO NOT** dispose of the product with domestic waste!



Electronic devices have to be disposed of according to the regional directives on electronic and electric waste disposal. In case of further questions, please consult your supplier. The supplier may take care of proper disposal.



## 2. SAFETY INSTRUCTIONS

---

### 2.1. Symbols

 <b>WARNING</b>	This symbol indicates information that, if ignored, could result possibly in personal injury or even death due to incorrect handling.
 <b>CAUTION</b>	This symbol indicates information that, if ignored, could possibly result in personal injury or physical damage due to incorrect handling.
<b>NOTICE</b>	Indicates information considered important, but not hazard-related.

### 2.2. Receipt and unpacking

Unpack the device without damaging it and check whether the device type corresponds to the one ordered. The packing should always follow the device until this has been permanently mounted.

### 2.3. Environment

Avoid direct sunlight, dust, high temperatures, mechanical vibrations and shock, and rain and heavy moisture.

### 2.4. Mounting

- Only technicians who are familiar with the technical terms, warnings, and instructions in the manual and who are able to follow these should connect the device.
- Mounting and connection of the device should comply with national legislation for mounting of electric materials, i.e. wire cross section, protective fuse, and location. Descriptions of input / output and supply connections are shown in this installation guide and on the side label.
- Use this device only in accordance with this instruction manual, as well as all applicable local and national laws and regulations. Only allow this device to be installed, operated, maintained, repaired, etc. by others who have also read and understood the user manual.
- Do not allow minors, untrained personnel, or personnel suffering from physical or mental impairment that would affect their ability to follow this manual to install, operate, maintain, or repair this device.
- Any untrained personnel who might be near the device while it is in operation **MUST** be informed that it is dangerous and fully instructed on how to avoid injury during its use.

** WARNING**

To avoid the risk of electric shock and fire, the safety instructions of this guide must be observed and the guidelines followed.

## 2.5. Cleaning

When disconnected, the device may be cleaned with a cloth moistened with distilled water.

** WARNING**

- The specifications must not be exceeded, and the device must only be applied as described in the following.
- Do not use the device near water or moisture.
- Do not install near any heat sources such as radiators, stoves or other heaters that produce heat.
- To prevent ignition of the explosive atmospheres, disconnect power before servicing and do not separate connectors when energized and an explosive gas mixture is present.
- Do not mount or remove devices from the power rail when an explosive gas mixture is present.
- Before the commissioning of the device, this installation guide must be examined carefully, and only qualified personnel (technicians) should install this device.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

** CAUTION**

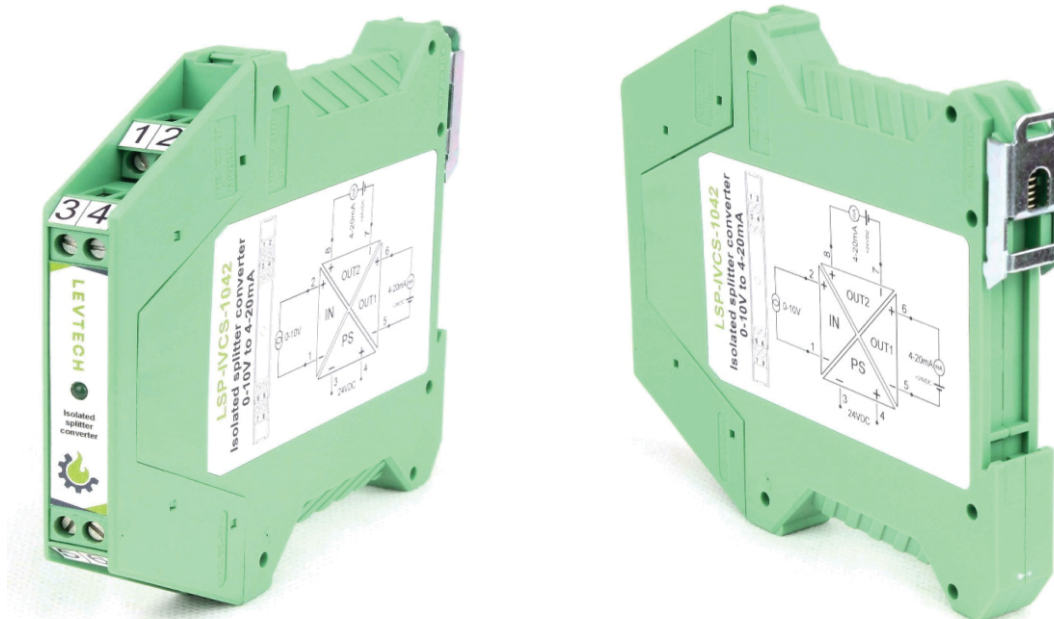
To avoid the risk of explosion due to electrostatic charging of the enclosure, do not handle the units unless the area is known to be safe, or appropriate safety measures are taken to avoid electrostatic discharge.

### 3. DESCRIPTION

The signal converter is used in cases where the measurement device or transmitter analog signal type is not corresponding to the input of the processing unit. For example, you have a conductivity transmitter with 4-20mA output, but you have a PLC with only analog 0-10V signal input and a display with also 0-10V input. Using this converter splitter the 4-20mA signal is converted to two identical 0-10V analog signal and you can connect the transmitter in the same time to the PLC and display. The models have voltage inputs/outputs ranging from 0-5V and 0-10V and the current inputs/outputs range from 0-20mA and 4-20mA, providing options for several applications. The models can have voltage input and current output or current input and voltage output each type has a specific order code.

### 4. FEATURES

- 0-20mA / 4-20mA current input / output;
- 0-5V / 0-10V voltage input/output;
- 3500VDC isolation;
- TS-35 DIN rail mounting;
- High Accuracy (+/-0.1%);
- IP40 case;
- Superior noise resistance;
- Screw terminals and simple wiring;
- No calibration or DIP switches;
- Power LED
- Supply voltage 24VDC;
- Made in EU





## 5. INSTALLATION AND WIRING

The module is designed to be installed, in a vertical position, on TS-35 DIN rail. For the best module performance and duration, avoid placing objects that could obstruct the ventilation. Never install the modules near heat sources.

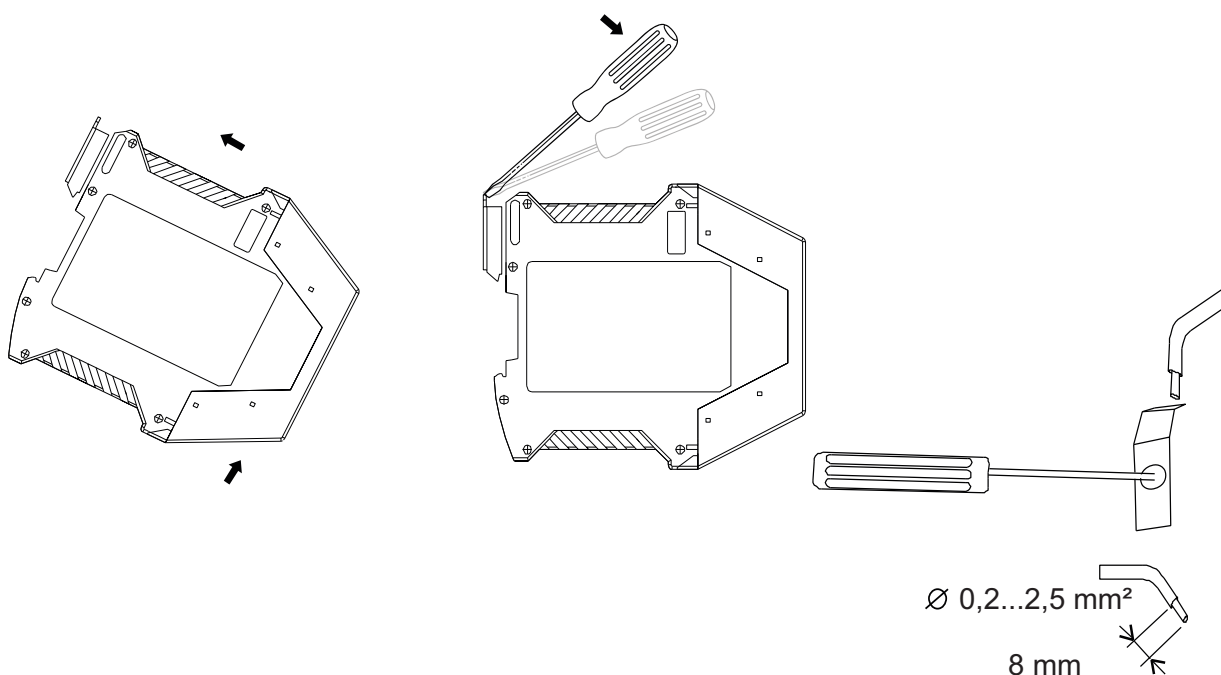
### 5.1. Installation on TS-35 DIN Rail

#### Inserting the Module in the Rail:

- 1) Attach the module in the lower part of the rail, as shown in the left figure below.
- 2) Press the module upwards.

#### Removing the Module in the Rail:

- 1) Apply leverage using a screwdriver, as shown in the right figure below.
- 2) Press the module downwards.



### 5.2. Connections with Screw Terminals

The module has been designed for screw-type terminal electrical connections. Proceed as follows to make the connections:

- 1) Strip the cables by 8mm.
- 2) Insert a screwdriver in hole, unscrewing the screw.
- 3) Insert the cable in the round hole.
- 4) Again, use the screwdriver to tight the screw.
- 5) Remove the screwdriver and make sure that the cable is tightly fastened in the terminal.

## 6. SPECIFICATIONS

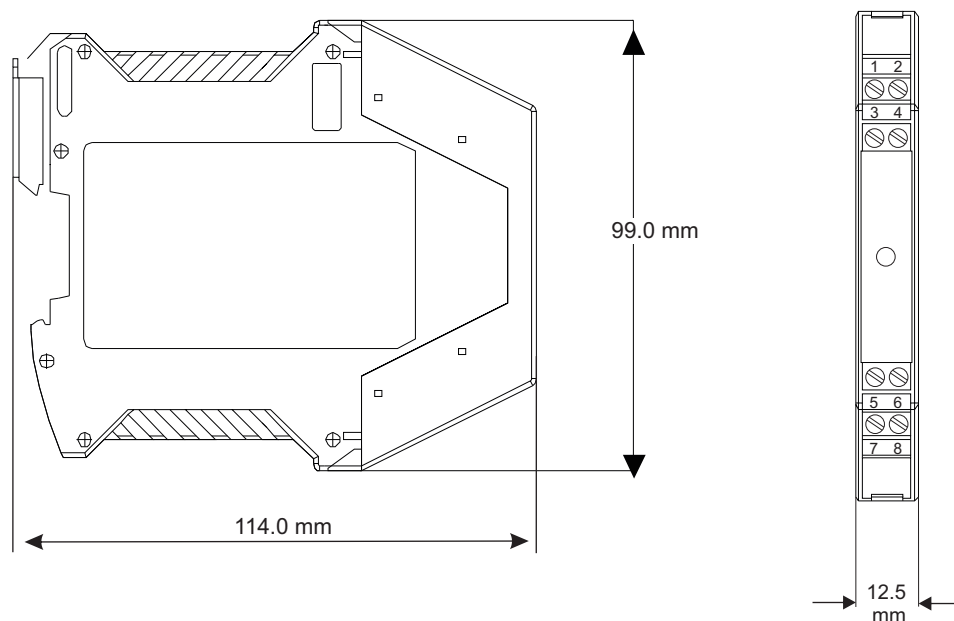
<b>Voltage Input</b>	
Number of inputs	1
Input Signal	Direct Voltage
Input Range	0-10V or 0-5V
Input Resistance	10K $\Omega$
<b>Current Input</b>	
Number of inputs	1
Input Signal	Direct Current
Input Range	0-20mA
Input Resistance	100 $\Omega$
<b>Voltage Output</b>	
Number of outputs	2
Output Signal	Direct Voltage
Output Range	0-10V or 0-5V
Output Resistance	>1K $\Omega$
<b>Current Output</b>	
Number of outputs	2
Output Signal	Direct Current
Output Range	0-20mA on current loop
Output Resistance	<500 $\Omega$
<b>General</b>	
Linearity error	0.10%
Output accuracy	0.10%
Limit frequency Voltage type	100Hz
Limit frequency Current type	1kHz
Response time	0.8ms
Isolation Voltage	3500V <sub>PEAK</sub>
Working isolation voltage	400 V <sub>RMS</sub>
<b>Power Supply</b>	
Supply Voltage	12 ~ 30VDC
Power Consumption	<54mA
Reverse-Polarity Protection	Yes
<b>Enclosure</b>	
IP Rating	IP40
Dimensions (L x D x H)	114 x 99 x 12.5 mm
Weight	82g (approx.)
Mounting	TS-35 DIN
Maximum Cable Cross-Section	2.5mm <sup>2</sup> (max.)
<b>Environmental Conditions</b>	
Ambient Temperature Range	- 10 ~ +60 $^{\circ}$ C
Storage Temperature Range	- 30 ~ +80 $^{\circ}$ C
Humidity Level	0 ~ 95% RH at 40 $^{\circ}$ C, no condensation

## 7. CONFIGURATION TYPE AND ORDER CODE

Among the models available for this product, Levtech offers options that feature voltage input and current output or current input and voltage output. The voltages range from 0-5V and 0-10V, while the current options are 0-20mA and 4-20mA models. The LSP- IACS models have current input and voltage output, while the LSP-IVCS have voltage input and current output. The following table shows the ordering codes for each model.

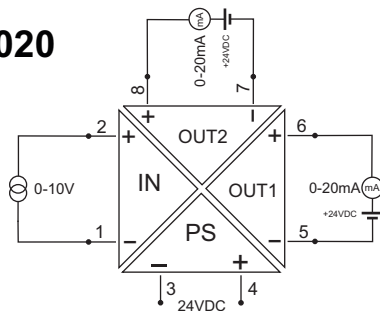
Order Code	Input	Output 1	Output 2
LSP-IVCS-1020	0-10V	0-20mA	0-20mA
LSP-IVCS-1042	0-10V	4-20mA	4-20mA
LSP-IVCS-0520	0-5V	0-20mA	0-20mA
LSP-IVCS-0542	0-5V	4-20mA	4-20mA
LSP-IACS-2010	0-20mA	0-10V	0-10V
LSP-IACS-2005	0-20mA	0-5V	0-5V
LSP-IACS-4210	4-20mA	0-10V	0-10V
LSP-IACS-4205	4-20mA	0-5V	0-5V

## 8. DIMENSIONS

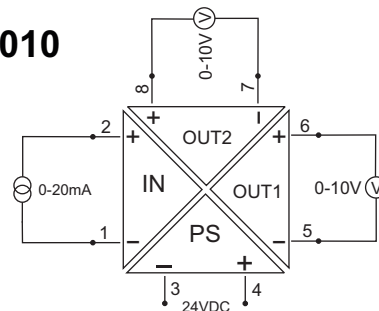


## 9. TERMINAL DESIGNATION

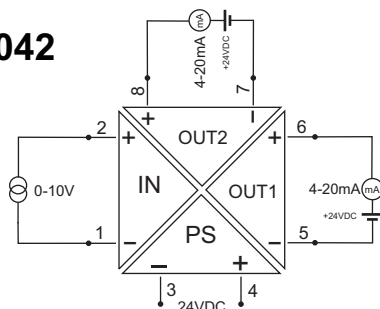
**LSP-IVCS-1020**



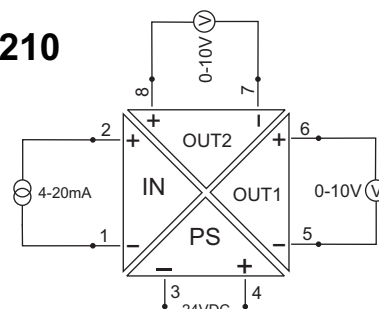
**LSP-IACS-2010**



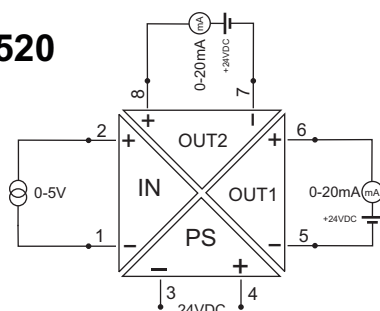
**LSP-IVCS-1042**



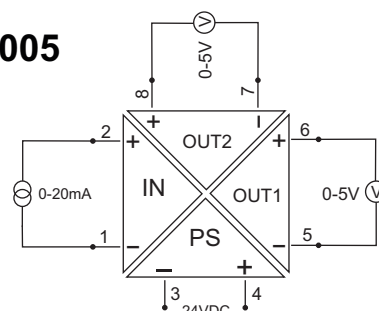
**LSP-IACS-4210**



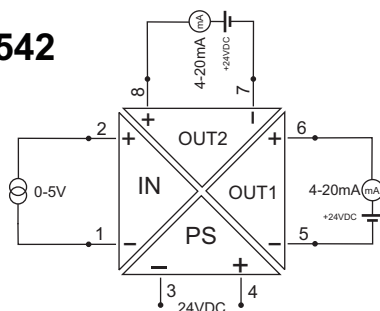
**LSP-IVCS-0520**



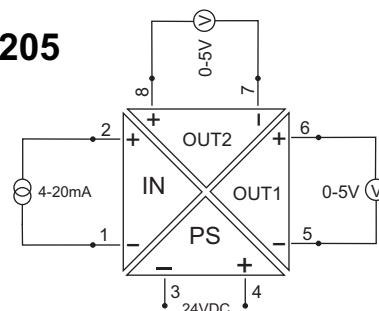
**LSP-IACS-2005**



**LSP-IVCS-0542**



**LSP-IACS-4205**



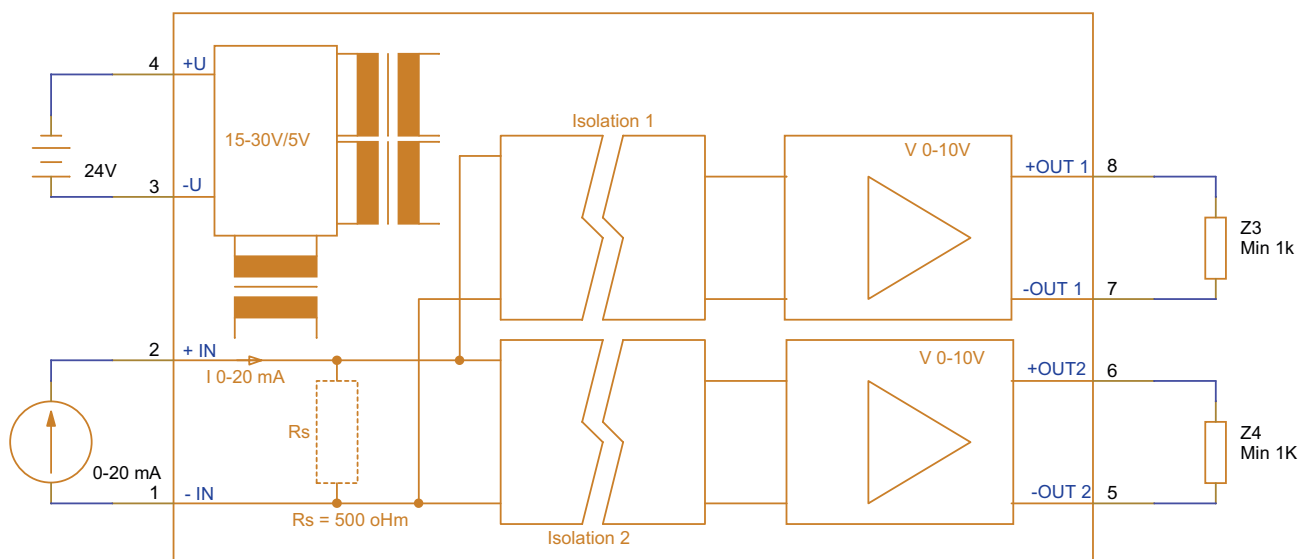
1. Negative Signal Input;
2. Positive Signal Input;
3. Negative Input of the Power Supply;
4. Positive Input of the Power Supply;

5. Negative Signal Output1;
6. Positive Signal Output1;
7. Negative Signal Output2;
8. Positive Signal Output2.

## 10. ELECTRICAL DIAGRAMS

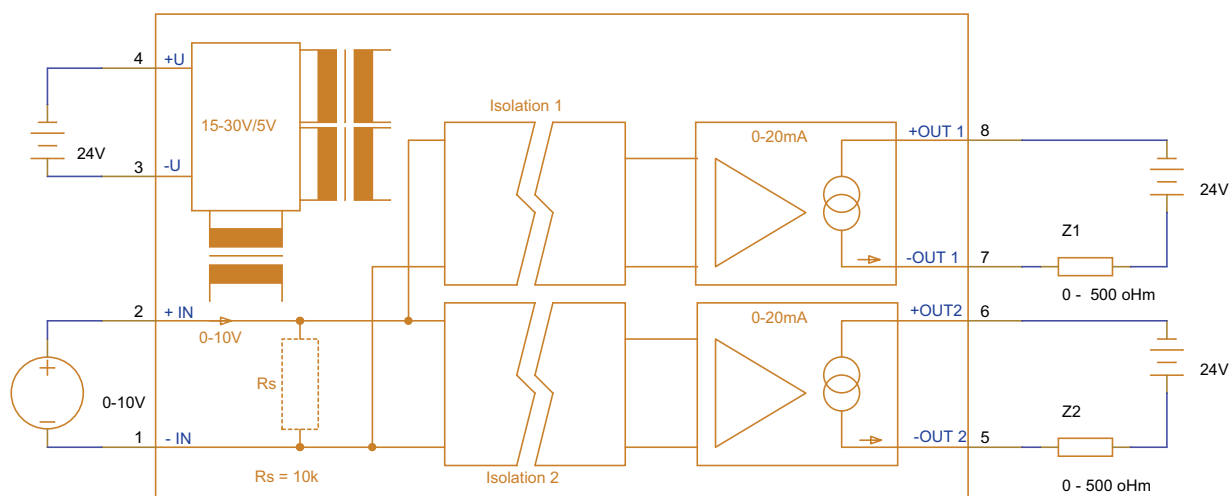
### LSP-IACS

LSP-IACS models features a current input and a voltage output. The input signal will be converted into voltage in both outputs, which are isolated from each other and from the input signal. Check section 6 (“Configuration Type and Order Code”) to see the available options.



### LSP-IVCS

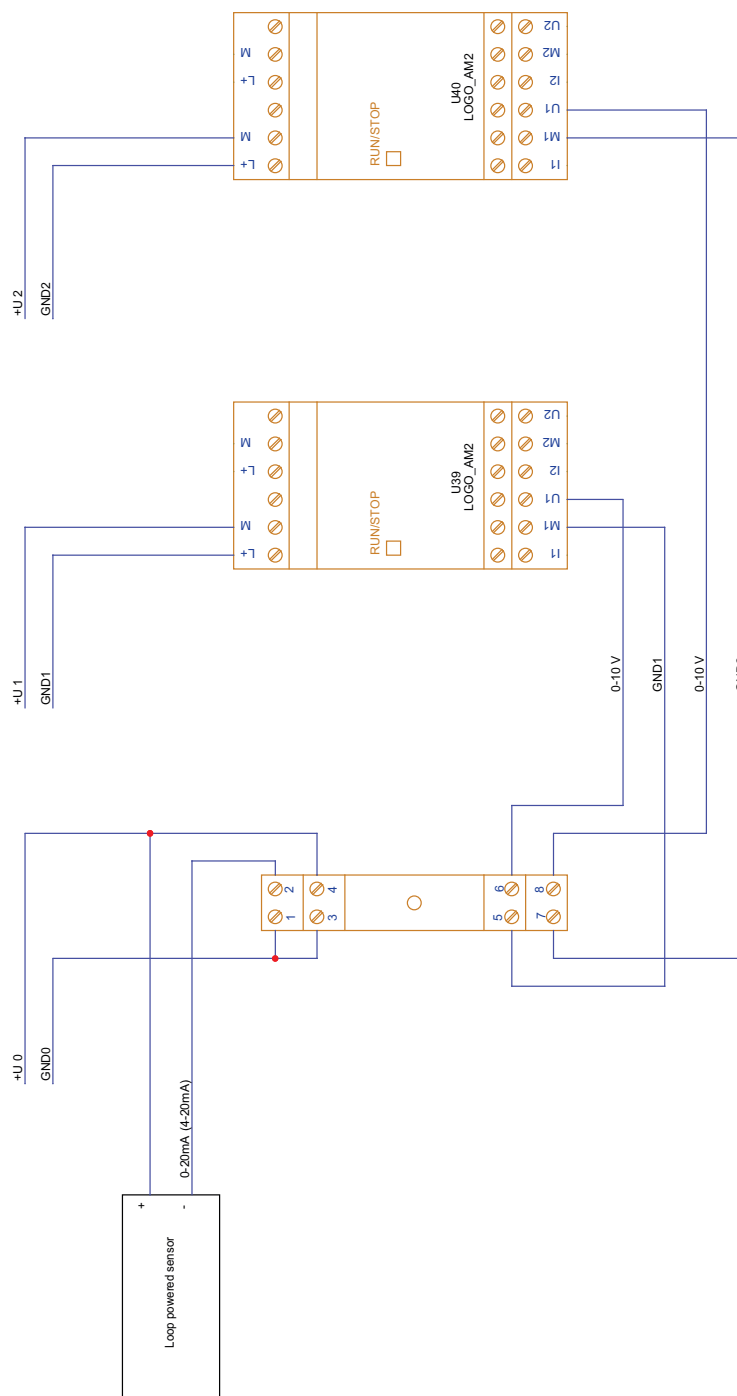
LSP-IVCS models features a voltage input and a current output. The input signal will be converted into current in both outputs, which are isolated from each other and from the input signal. Check section 6 (“Configuration Type and Order Code”) to see the available options.



## 10. ELECTRICAL DIAGRAMS

### LSP-IACS Wiring Example:

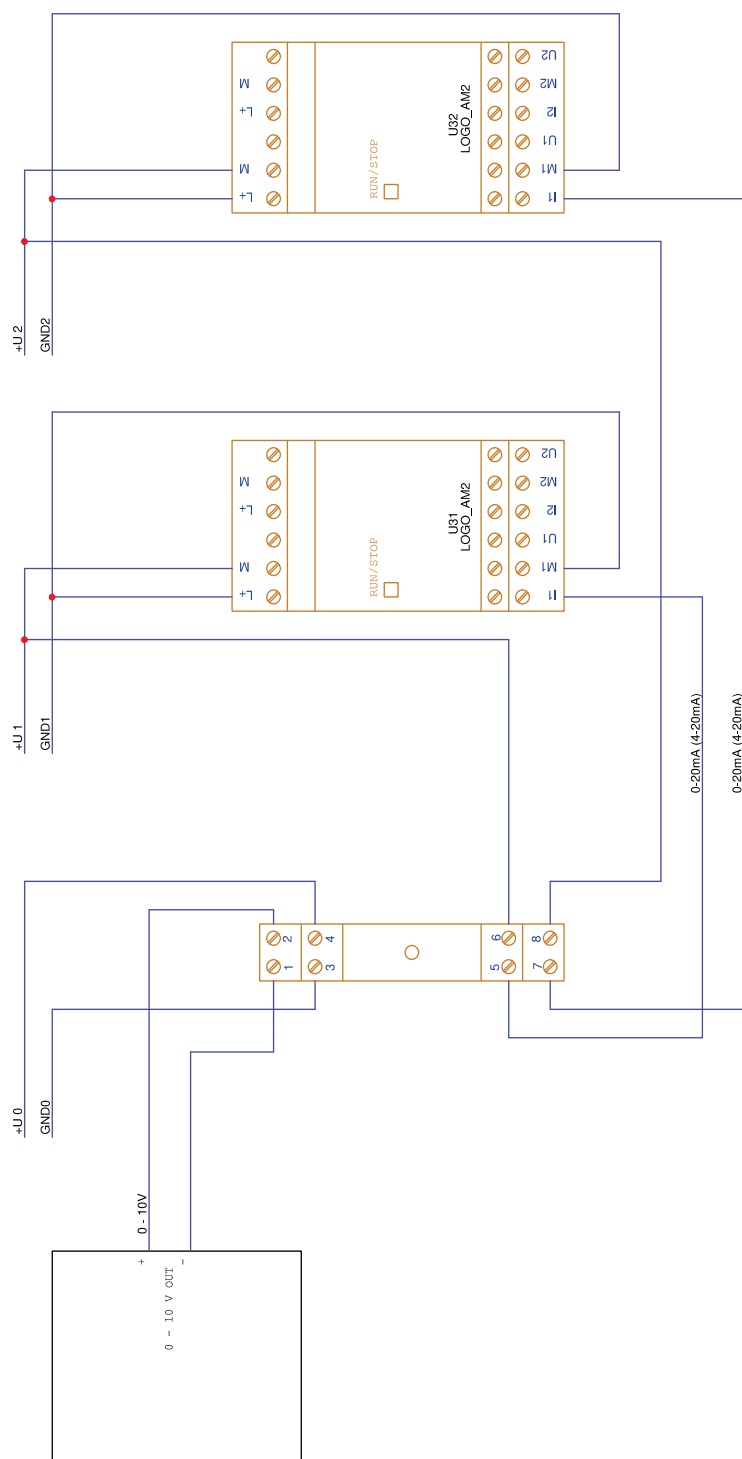
The figure below shown an example of a connection of our isolated converter splitter with a 0-20mA input and 0-10V outputs both connected to PLCs, but isolated from each other.



## 10. ELECTRICAL DIAGRAMS

### LSP-IVCS Wiring Example:

The figure below shown an example of a connection of our isolated converter splitter with a 0-10V input and current outputs are both connected to PLCs in current loop, but isolated from each other.

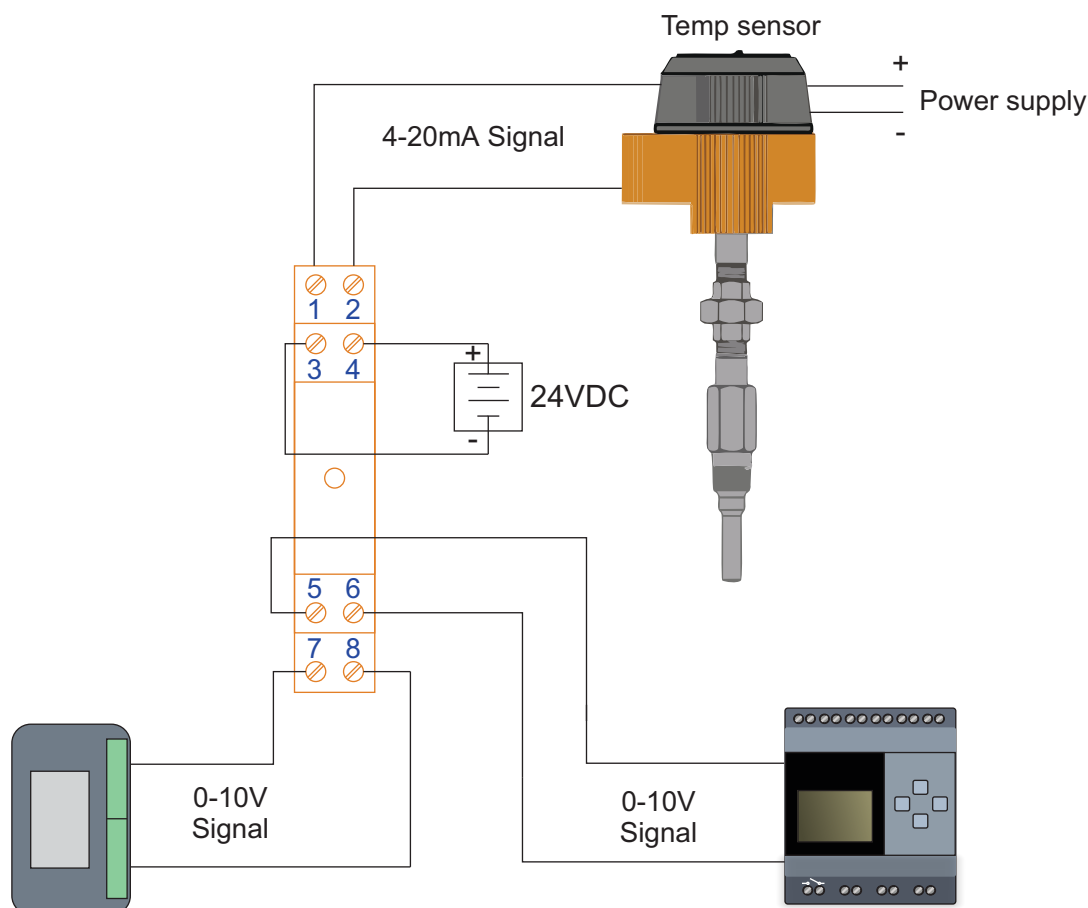


## 11. APPLICATIONS

This device can be used for several applications on industrial automation. It is ideal for removing errors caused by noise and signal interference, protecting sensitive equipment such as a PLC from potential hazards, and converting analog signals. In addition to that, it sends the same signal for its two isolated outputs. The models can have voltage input and current output or current input and voltage output.

### Example 1:

Suppose that you have an active temperature sensor that operate in a 4-20mA current loop and you need to record the temperature in a data acquisition hardware but, at the same time, use it to control a part of your manufacturing process with a PLC that allows input voltages from 0-10V. Therefore, you could use one of this isolated converter splitter to isolate the input signal and provide two isolated output signals. You could connect the sensor to the input, the data acquisition hardware to Output 1 and the PLC to Output 2.

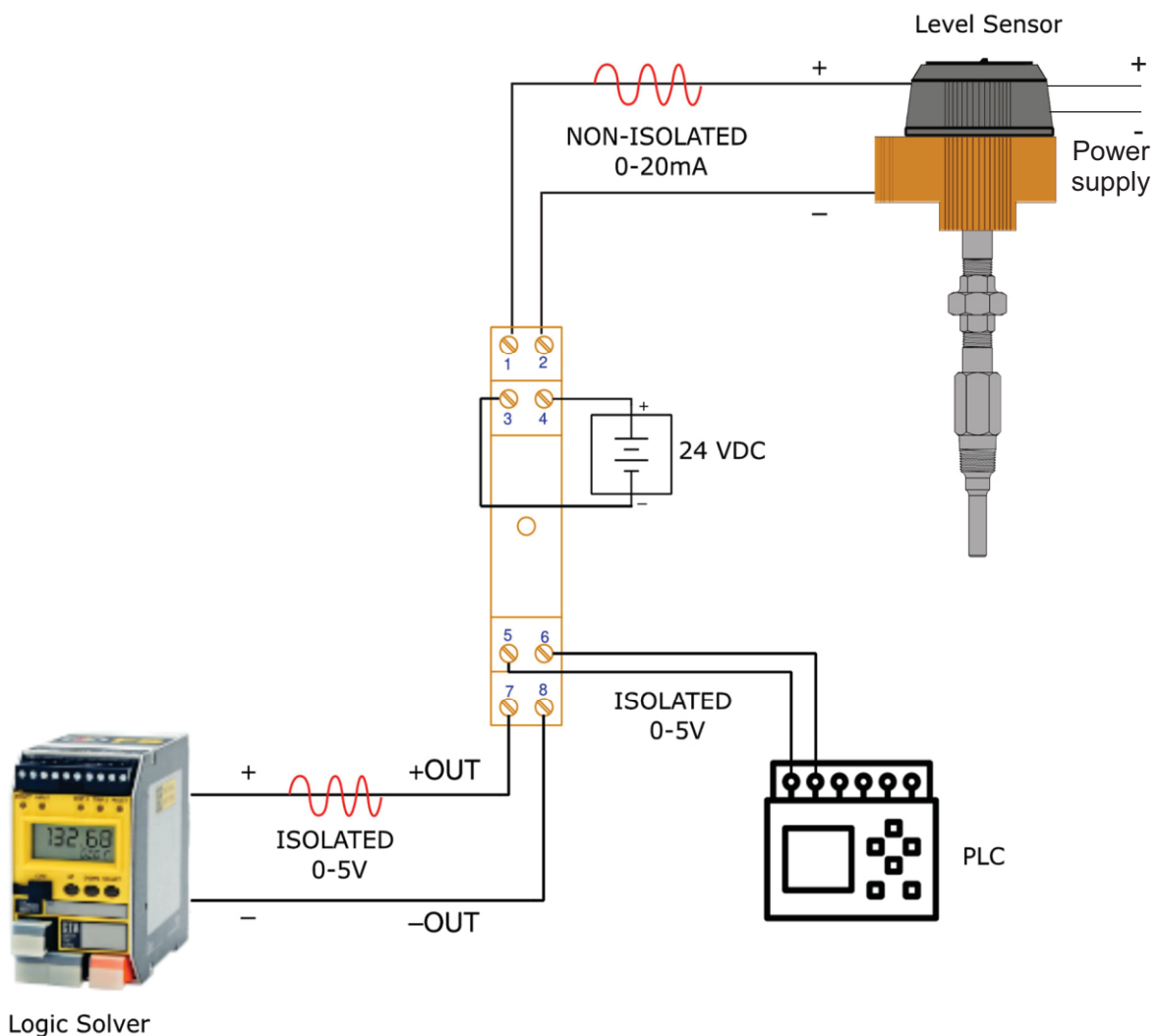




## 11. APPLICATIONS

### Example 2:

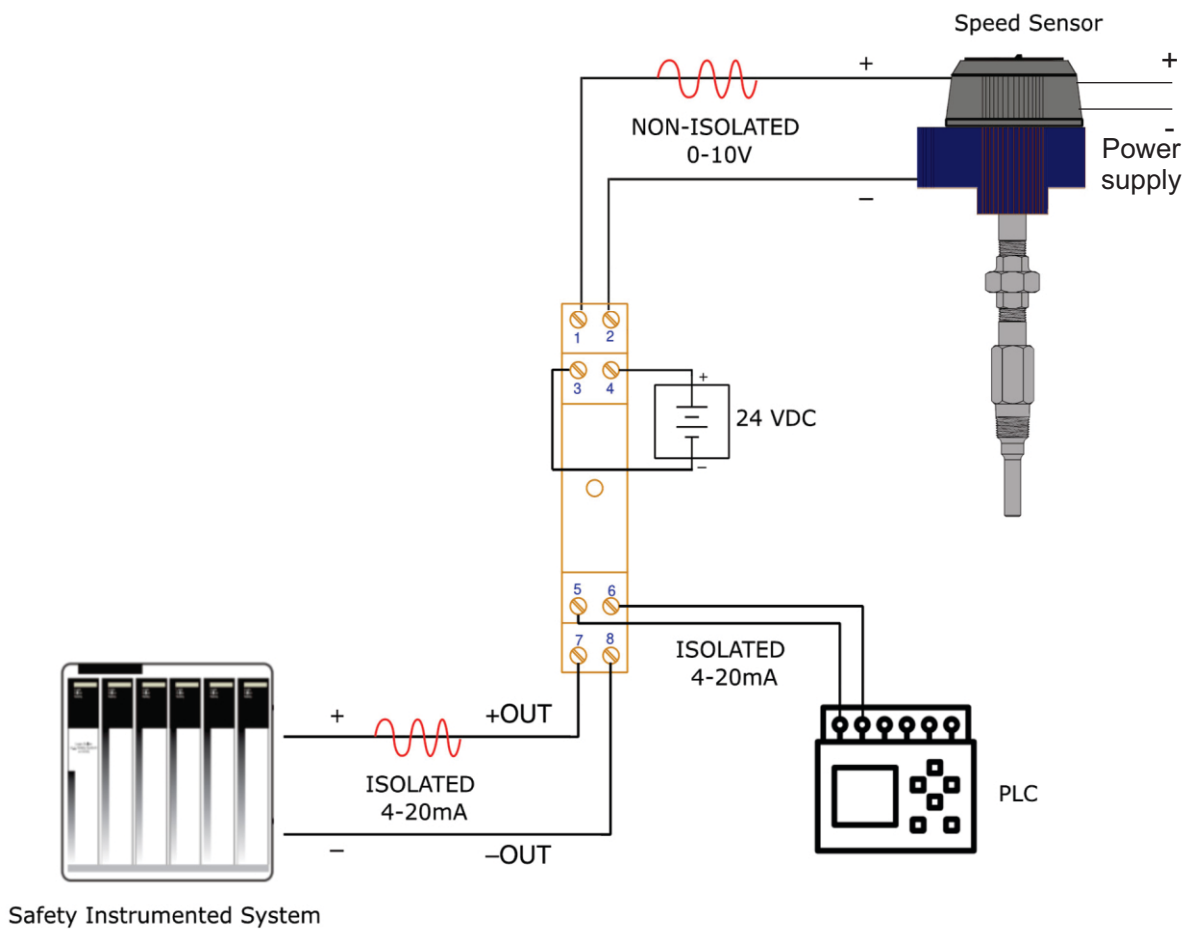
There is a level sensor in a water tank on the field that gives a 0-20mA output and you need to read its measurements both on a PLC (0-5V input) and a logic solver (0-5V input), and these pieces of equipment need to be isolated for protection and noise/interference decrease. The sensor will then be connected to a model of this splitter that allows inputs varying from 0mA to 20mA input and outputs from 0V to 5V, considering the maximum voltage of the logic solver. Thus, Output 1 is connected to the PLC and Output 2 is connected to the logic solver. So, the level meter output is connected to two different devices thanks to our splitter converter, both isolated from each other. If there is any interference on the line or maybe an electrical discharge strikes the sensor, neither the PLC nor the logic solver will be harmed because our device will protect it.



## 11. APPLICATIONS

### Example 3:

A sensor that measures the speed of a conveyor in a factory provides outputs ranging from 0-10V, and you use these measurements to control your production process. You could connect its output directly to a PLC and at the same time send this speed to a safety instrumented system (SIS), which operates in a 4-20mA loop. Therefore, you can use one of our splitters to convert this speed measure and send it to the SIS and the PLC, all isolated.



## **12. OPERATION AND MAINTENANCE**

---

### **12.1. Operation**

This isolator requires no user adjustments during commissioning. It comes with factory calibration ready for use.

If the isolator fails to operate, check for bad connections. In the unlikely event of the isolator not working, it should be returned to the supplier for repair or replacement.

### **12.2. Maintenance**

Levtech suggests a quick check for terminal tightness and general unit condition. Always adhere to any site requirements for programmed maintenance.

## **13. WARRANTY DISCLAIMER**

---

Levtech warrants this product to be free from significant deviations in material and workmanship for a period of 3 year from date of purchase. If repair or adjustment is necessary and has not been the result of abuse or misuse, within the 3 year period, please return-freight-prepaid and the correction of the defect will be made free of charge. If you purchased the item from our distributors and it is under warranty, please contact them to notify us of the situation. Levtech Service Department will determine if the product problem is due to deviations or customer misuse. Out-of-warranty products will be repaired on a charge basis.

### **13.1. Return of items**

Authorization must be obtained from one of our representatives before returning items for any reason. When applying for authorization, have the model and serial number handy, including data regarding the reason for return. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss.

Levtech will not be responsible for damage resulting from careless or insufficient packing. A fee will be charged on all authorized returns.

Levtech reserves the right to make improvements in design, construction and appearance of our products without notice on which the buyer could reasonably have discovered the alleged defect or breach.

## 14. CONTACT INFORMATION

---



### OPENING HOURS

Mon-Fri 8:00 AM – 18:00 PM  
Sat 9:00 AM – 14:00 PM



### ADDRESS

319 Lueta 537140 Harghita Romania



### EMAIL

office@levtech.ro

## ADDRESS

Lueta Nr. 319  
Post Code 537140  
Harghita  
Romania

## WEBSITE

<https://www.levtech.ro/>

## SOCIAL MEDIA



Levtech



@levtechsp



@levtech\_s\_p

## COMPANY DATA

LEVTECH SERVICE & PRODUCTION SRL  
Fiscal code (CIF): RO35733217  
Trade Register: RC J19/134/2016  
IBAN: RO39RNCB0152150349440001  
BCR BANK