



TRANSDUCER SUPPLIED FROM A CURRENT LOOP P15 TYPE



USER'S MANUAL



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1. APPLICATION

The P15 transducer supplied from a current loop converts the voltage, resistance or temperature into a 4...20 mA standard signal.

From the electrical point of view, the transducer can be treated as an active load forcing a current proportional to input signal changes, from the supply circuit.

2. TRANSDUCER SET

The set of the P15 transducer is composed of:

- P15 transducer 1 pc.
- user's manual 1 pc.
- warranty card 1 pc.
- plug with screw terminals 2 pcs

When unpacking the instrument, please check whether the type and execution code on the data plate correspond to the order.

3. BASIC REQUIREMENTS AND OPERATIONAL SERVICE

Symbols located in this user's manual mean:



WARNING!

Warning of potential, hazardous situations. Especially important. One must acquaint with this before connecting the P15 transducer.

The non-observance of notices marked by these symbols can occasion severe injuries of the personnel and the damage of the instrument.



CAUTION!

Designates a general useful note. If you observe it, handling of the recorder is made easier.

One must take note of this, when the instrument is working inconsistently to the expectations.

Possible consequences if disregarded !

In the security scope the transducer meets the requirements of the EN 61010 -standard.

Remarks concerning the operator safety:



1. General

- The P15 transducer is destined to be mounted on a 35 mm DIN rail.
- Non-authorized removal of the required housing, inappropriate use, incorrect installation or operation, create the risk of injury to personnel or damage to equipment. For more detailed information please study this user's manual.
- All operations concerning transport, installation, and commissioning as well as maintenance must be carried out by qualified, skilled personnel and national regulations for the prevention of accidents must be observed.
- According to this basic safety information, qualified, skilled personnel are persons who are familiar with the installation, assembly, commissioning, and operation of the product and who have qualifications necessary for their occupation.

2. Transport, Storage

Please observe the notes on transport, storage and appropriate handling.

Observe the climatic conditions given in technical data.

3. Installation

- The transducer must be installed according to the regulation and instructions given in this user's manual.
- Ensure proper handling and avoid mechanical stress.
- Do not bend any components and do not change any insulation distances.
- Do not touch any electronic components and contacts.
- Instruments may contain electrostatically sensitive components, which can easily be damaged by inappropriate handling.
- Do not damage or destroy any electrical components since this might endanger your health!

4. Electrical Connection

- Before switching the instrument on, one must check the correctness of connection to the network.
- In case of the protection terminal connection with a separate lead one must remember to connect it before the connection of the instrument to the mains.
- When working on live instruments, the applicable national regulations for the prevention of accidents must be observed.
- The electrical installation must be carried out according to the appropriate regulations (cable cross-sections, fuses, PE connection). Additional information can be obtained from the user's manual.
- The documentation contains information about installation in compliance with EMC (shielding, grounding, filters and cables). These notes must be observed for all CE-marked products.

5. Operation

- Measuring systems including P15 transducers, must be equipped with protection devices according to the corresponding standard and regulations for prevention of accidents.
- After the instrument has been disconnected from the supply voltage, live components and power connections must not be touched immediately because capacitors can be charged.
- The housing must be closed during operation.



6. Maintenance and servicing

- Please observe the manufacturer's documentation.
- Read all product-specific safety and application notes in this user's manual.
- Before taking the housing out, one must turn the supply off.
- **The removal of the housing during the warranty contract period may cause its cancellation.**

4. INSTALLATION

P15 transducers are designed to be installed on a 35 mm rail acc. to EN 60715 standard.

The housing with dimensions: 22.5 x 120 x 100 mm is made of a self-extinguishing plastics. Terminal strips, with screws or self-locking terminals, enable the connection of external wires of 2.5 mm² section. Overall dimensions and fixing way are presented on the fig.1

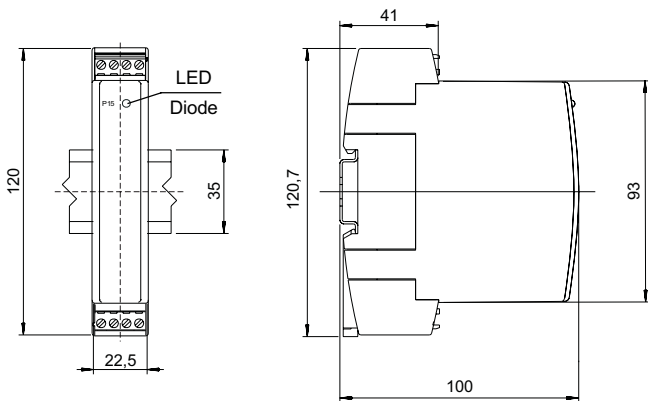


Fig.1. Transducer overall dimensions and fixing way

5. EXTERNAL CONNECTION DIAGRAM



The transducer has two terminal strips, which two plugs with screw terminals (delivered with the transducer) are connected to. Connections of external signals are shown on the fig.2.

Measured signal	Connection way
Thermocouple or voltage 0 ... 60 mV	
Resistance thermometer or resistance measurement in a two-wire system.	
Resistance thermometer or resistance measurement in a three-wire system.	
Voltage 0 ... 10 V	

Fig.2. Description of P15 transducer terminal strips

If the customer does not give the kind of compensation, the P15 transducer operates with the automatic function of wire resistance compensation (in case of RTD sensors) or with the automatic temperature compensation of cold junctions (in case of thermocouples TC). It is recommended to apply shielded wires on the transducer input and output if the transducer is to work in an environment with interference.

The P15 transducer is supplied from the current loop, and the 4...20 mA signal output is the input supplying the transducer. Working in such a configuration, the transducer acts as an active load and the absorbed current is proportional to changes of the measured signal on the transducer input.

6. SERVICING

After connecting external signals and the supply turning on, the transducer is ready to work, what is signaled by the lighting diode.

The P15 transducer has parameters programmed by the manufacturer for the version selected by the code. There is the possibility to change transducer parameters in authorized workshops or with the manufacturer after a prior agreement.

7. TECHNICAL DATA

Basic parameters:

- input signals acc. to version codes

Type of input	Full range	Conversion error	Input resistance
Voltage	(0...10) V	0.5	> 1 M Ω
Voltage	(0...60) mV		> 9 M Ω
J (Fe-CuNi)	(-100...+1200) $^{\circ}$ C		
K (NiCr-NiAl)	(-100...+1370) $^{\circ}$ C		
N (NiCrSi-NiSi)	(-100...+1300) $^{\circ}$ C		
E (NiCr-CuNi)	(-100...+900) $^{\circ}$ C		
Pt100	(-50...+100) $^{\circ}$ C		
Pt100	(-50...+400) $^{\circ}$ C		
Resistance	(0...150) Ω		
Resistance	(0...250) Ω		

Thermocouple characteristics acc. to EN 60584-1

Resistance thermometer characteristics acc. to EN 60751+A2

Range of analog output	4...20 mA
Analog output resolution	0.005 mA
Basic error	0.2 % of the range
Conversion time	1 s
Power consumption	< 0.7 VA
Current flowing through the resistance thermometer:	
- Pt100 or resistance	< 400 μ A
Resistance of wires connecting the resistance thermometer with the transducer	< 10 Ω / wire
Transducer preheating time	15 min
Additional error from ambient temperature changes	\pm (0.2 % range /10K)

Rated operating conditions:

- supply voltage 19...30 V d.c.
(at max. load $R_{load} = 500 \Omega$)
at a smaller load:
 $U_{min} = 7 V + R_{load} \cdot 24 mA$
- ambient temperature -25...23...55 °C
- storage temperature -25...+85 °C
- relative air humidity <95% (inadmissible condensation)
- operating position any

Sustained overload capacity:

- thermocouples, resistance thermometers 1 %
- voltage and resistance 20 %

Short duration overload capacity (3 s):

- sensor and voltage inputs 30 V

Ensured protection degree:

- housing IP50
- electrical circuits IP20

Dimensions

22.5 x 100 x 120 mm

Weight

110 g

Mounting

on a 35 mm rail

Electromagnetic compatibility:

- noise immunity, acc. to EN 61000- 6-2
- noise emissions, acc. to EN 61000-6-4

Safety requirements acc. to EN 61010-1

- installation category III
- pollution degree 2
- phase-to-earth working voltage 50 V

8. ORDERING CODE



Version codes of the P15 transducer

Table 1

Transducer supplied from current loop P15 -	XX	XX	X
Input signal:			
voltage (0 ... 10) V	00		
thermocouple J (-100 ... +1200) °C	01		
thermocouple K (-100 ... +1370) °C	02		
thermocouple N (-100 ... +1300) °C	03		
thermocouple E (-100 ... +900) °C	04		
resist. thermom. Pt100(-50 ... 100) °C	05		
resist. thermom. Pt100(-50 ... 400) °C	06		
resistance (0 ... 150) Ω	07		
resistance (0 ... 250) Ω	08		
voltage (0 ... 60) mV	09		
Kind of option:			
Standard	00		
On order*		XX	
Acceptance tests:			
without additional requirements			8
with a quality inspection certificate			7
acc. to customer's agreement*			X

* after agreement with the manufacturer

ORDERING EXAMPLE:

The code: **P15-05.00.8**

means a transducer version supplied from a current loop,

05 - Input signal: Pt100 RTD, range: -50...100°C

00 - Standard option

8 - Without additional quality inspection requirements

9. MAINTENANCE AND WARRANTY

The P15 transducer does not require any periodical maintenance. In case of some incorrect operations:

1. After the dispatch date and within the period stated in the warranty card.

One should return the instrument to the Manufacturer's Quality Inspection Dept.

If the instrument has been used in compliance with the instructions, the Manufacturer warrants to repair it free of charge.

The disassembling of the housing causes the cancellation of the granted warranty.

2. After the warranty period

One should send the instrument to repair it in an authorized service workshop.

Spare parts are available for the period of five years from the date of purchase.

Our policy is one of continuous improvement and we reserve the right to make changes in design and specifications of any products as engineering advances or necessity requires and revise the above specifications without notice.

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