



LUMEL P18L Humidity and Temperature Transducer User Manual

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TEMPERATURE AND HUMIDITY
TRANSDUCER SUPPLIED
FROM A CURRENT LOOP
P18L



CE USER'S MANUAL

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Application

The P18L transducer is a device destined for the continuous conversion of relative humidity or ambient temperature into a standard analog current signal. The transducer is fixed on a wall. Applied sensor shields enable the application of the P18L transducer in various ambient conditions

Basic requirements, operational safety

In the security scope, the transducer meets the requirements of the EN 61010 -1 standard.

Remarks concerning the operator safety:

1. General

- All operations concerning transport, installation, and commissioning as well as maintenance must be carried out by qualified, skilled personnel acc. to the section 3.2. of the user's manual.
- 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.
- In order to avoid any damage, before switching the supply on, it is recommended to ensure that all wires were correctly connected. Before the transducer assembly, one must pass supplying wires through the packing. Screw the packing seal in order to obtain the leaktightness. If the packing seal is not screwed, we cannot ensure the required IP65 leaktightness.

When unpacking the P18L transducer, please check whether the type and version code on the data plate correspond to the order code.

Installation

3.1. Assembly

The P18L transducer is designed to be mounted on a wall by means of a screw connection or glue without the loss of IP 65 tightness.

The transducer housing is made of a self-extinguishing plastics.

Housing dimensions: 64 x 58 x 35 mm.

The transducer has screw connectors placed inside the transducer, which enable the connection of external wires of 1 mm² cross-section.

Overall dimensions and the fixing way are shown on the fig. 1

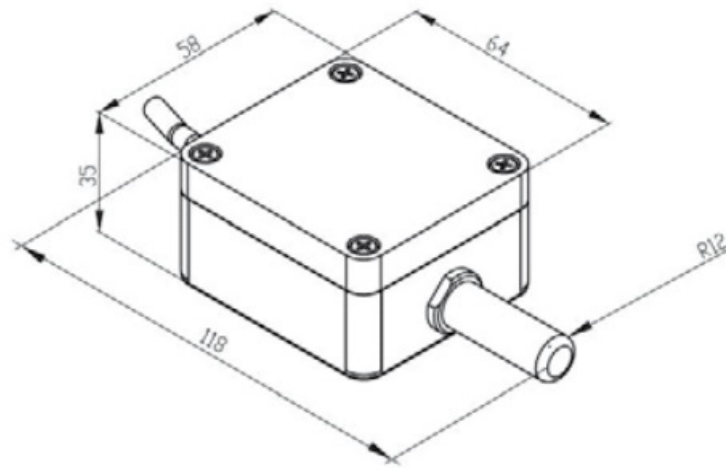


Fig 1. Overall dimensions of the P18L transducer

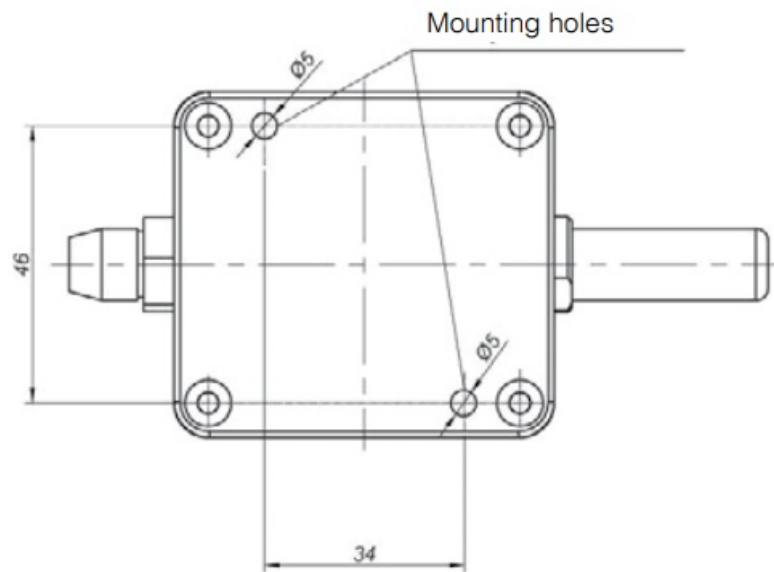


Fig.2. Lay-out of assembly holes of the P18 transducer

3.2. Electrical connections

The P18L transducer has 2 connecting terminals to which there is access after removing the cover of the transducer housing.

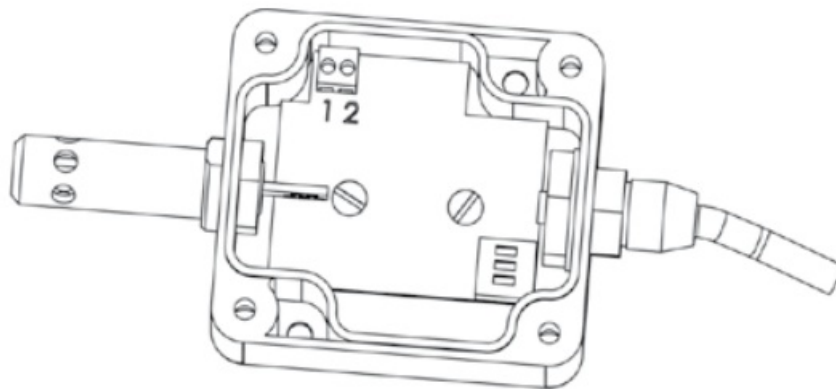


Fig.3 Marking of terminals for the connection of external signals

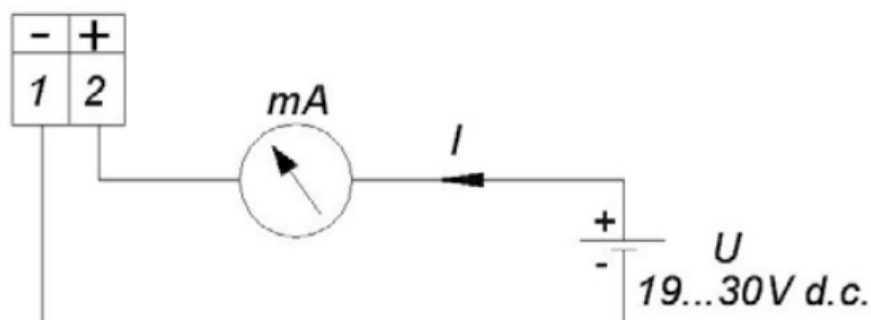


Fig. 4 Way of transducer electrical connections

In case of the transducer work in an environment with high interference, one must apply shielded wires. The shield must be connected to the nearest PE point from the feeder side.

Servicing

After connecting wires, closing and servicing the housing, and switching to the supply on, the transducer is ready to work. The correct measurement result appears only after the time of the measurement initialisation ca 2.5 minutes. After this laps of time, the analog output is correctly steered on. The transducer converts the temperature or relative humidity into a 4-20 mA standard current signal. The choice of the converted quantity is realized by means of the jumper Nr 1 of the 3-position switch placed on the transducer plate. If the jumper Nr 1 is in the position "ON", the transducer converts the relative humidity. (Fig. 5).

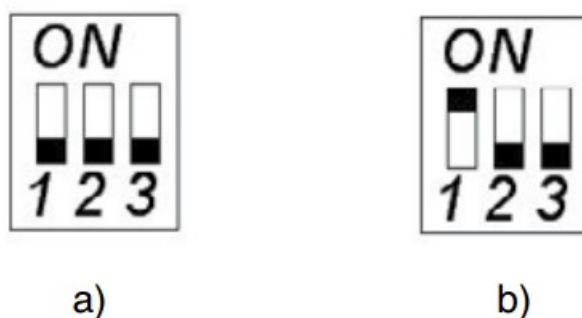


Fig. 5 Choice of the converted quantity:




- a) temperature,
- b) relative humidity

Accessories

As a standard, the P18L transducer is equipped with a metallic shield of the sensor, destined only for indoors application.

For other applications it is recommended to use additional sensor shields, depending on the transducer operation conditions.

Sensor protection shields

Item	Order code	Design	Name	Construction	Features	Typical application
1	20-015-00- 00011		Membrane filter	Casing made of P C Membrane of teflon laminated by a film. Pore size: 1 µm	Mean filtration effect. Maximal temp.: up to 80°C Response time: t _{10/90} : 15 s	Building automation. In rooms with low pollution.
2	20-015-00- 00007		Filter made of teflon	Sintered teflon. Pore size: 50 µm	High chemical resistance.. Maximal temp.: up to 180°C Response time: t _{10/90} : 14 s	Drying processes in chemical applications
3	20-015-00- 00003		Filter made of sintered bronze	Sintered bronze. Pore size: 60 µm	High mechanical resistance. To cooperate with high pollution. Applied at small air humidity. Response time: t _{10/90} : 10 s	Agricultural applications

Technical data

Basic parameters:

<ul style="list-style-type: none"> – range of relative humidity measurement (RH) – basic error of relative humidity conversion 1) – hysteresis of the humidity measurement (T) – range of temperature measurement (T) – basic error of temperature conversion – additional errors – temperature influence 	<p>0...100% without condensation</p> <p>1)</p> <p>± 2% for RH = 10...90%</p> <p>± 3% for remaining range</p> <p>± 1% RH</p> <p>– 20...60°C</p> <p>± 0.5% of the range</p> <p>± 25% of the basic error/10°C</p>
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Analog output:

<ul style="list-style-type: none"> – current – maximal load resistance of the current output 	4... 20 mA 500 Ω
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Rated operating conditions:

<ul style="list-style-type: none"> – supply – consumption – ambient temperature – relative air humidity – rate of air flow 	19...30 V d.c. < 1.5 VA – 30...23...85°C < 95% (admissible condensation) 2 m/s
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1) In case of water vapour condensation on the sensor surface, the maximal error can increase to 3% RH

<ul style="list-style-type: none"> – pre-heating time – protection degree ensured by the housing – fixing – weight – dimensions – work position: <ul style="list-style-type: none"> • in applications non-exposed to a direct contact with water • in applications exposed to a direct contact with water 	15 minutes IP 65 on a wall 125 g (35 ´ 58 ´ 118) mm any with the sensor chamber directed towards the ground.
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Electromagnetic compatibility:

<ul style="list-style-type: none"> – immunity noise – emission noise 	acc. to EN 61000-6-2 acc. to EN 61000-6-4
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Security requirements:

<ul style="list-style-type: none"> – installation category – pollution grade – working voltage in relation to the earth 	III 2 50V
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Before a failure will be declared

Possibilities of incorrect work of the P18L transducer Table 2.

Symptoms	Procedure
Data inconsistent with our expectations appear on the transducer output.	In the version with analog outputs, check parameters of the individual characteristic of analog outputs.

Ordering codes

Ordering codes of P18L transducer versions Table 3.

Code	Description
P18L 000	Temperature and humidity transducer P18L, built-in temperature and humidity sensor, supplied from a current loop, 1 x analog output 4 ... 20 mA; without any extra requirements



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P18L-09_R1

Documents / Resources

	<p>LUMEL P18L Humidity and Temperature Transducer [pdf] User Manual</p> <p>P18L, Humidity and Temperature Transducer, Temperature Transducer, Humidity Humidity, Humidity</p>
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References

- [Lumel | Automation devices and systems | SMT/THT assembly | Lumel](#)