



Operating instructions
Air humidity sensor
LDH290

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1 Safety instructions

- The unit described is a subcomponent for integration into a system.
 - The system architect is responsible for the safety of the system.
 - The system creator undertakes to perform a risk assessment and to create documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the architect of the system.
- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ Intended use).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.
- Installation, electrical connection, set-up, operation and maintenance of the product must be carried out by qualified personnel authorised by the machine operator.
- Protect units and cables against damage.

2 Preliminary note

You will find instructions, technical data, approvals and further information using the QR code on the unit / packaging or at www.ifm.com.

2.1 Symbols used

- ✓ Requirement
- Instructions
- ▷ Reaction, result
- [...] Designation of keys, buttons or indications
- Cross-reference
-  Important note
Non-compliance may result in malfunction or interference.
-  Information
Supplementary note

3 Items supplied

- Air humidity sensor LDH290
- Product information with safety instructions and reference to the complete operating instructions at www.ifm.com.

In addition, the following is necessary for installation and operation:

- Mounting material (→ Accessories)



Only use accessories from ifm electronic gmbh! The optimum function is not ensured when using components from other manufacturers.



Available accessories: www.ifm.com

4 Intended use

The unit detects the ambient humidity (relative humidity) and the ambient temperature and converts the measured values into 4...20 mA signals. These signals can be used and processed by a controller or monitoring unit, e.g. a PLC.

4.1 Application area

The unit is suitable for ambient air in dry indoor spaces. Due to its' design, it is especially suitable for installation in control cabinets.

It covers the following measuring ranges:

- Relative humidity: 0...100 %
- Temperature: -40 ... +60°C (-40 ... +140 °F)

4.2 Restriction of the application area

- The unit may only be operated in an environment which ensures degree of soiling 2 (or higher) according to IEC 61010. Degree of soiling 2 allows only non-conductive soiling. Occasionally, temporary conductivity due to condensation is to be expected.



Use only in environments with max. 90 % relative humidity (observe protection rating IP20).

- Do not operate the unit in turbulent ambient air (e.g. suction pipes and dew point applications). Incorrect measurements may occur.
- The unit must not be covered.
- The unit must not be operated in aggressive ambient air.
- It is only allowed to operate the unit at an altitude of up to 4000 m.

5 Function

5.1 Measuring principle

5.1.1 Humidity measurement

The unit measures the relative humidity of the ambient air by means of a capacitive measuring element. The air's water saturation level is indicated in the range of 0...100 %:

0%	Dry air
100%	Air is fully saturated with water

5.1.2 Temperature monitoring

The unit measures the ambient temperature by means of an integrated temperature element.

6 Installation

6.1 Installation location / environment

(→ Observe  6) restriction of the application area

6.2 Installation procedure

The installation either requires a clip for 35 mm DIN rail, EN 60715 (DIN rail mounting) or the M5 screw connection.

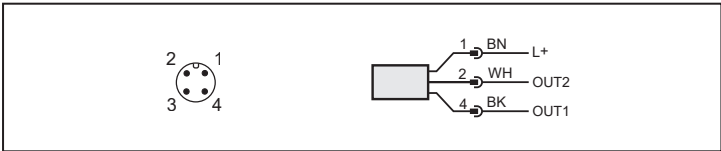
7 Electrical connection

- The device must be connected by a qualified electrician.

The national and international regulations for the installation of electrical equipment must be adhered to.

Supply voltage SELV, PELV according to the technical data sheet.

 - ▶ Disconnect power.
 - ▶ Connect the unit as follows:



Pin	Core colours	
1:	BN	brown
2:	WH	white
4:	BK	black
OUT1: 4...20 mA (temperature)		
OUT2: 4...20 mA (relative humidity)		
Colours to DIN EN 60947-5-2		

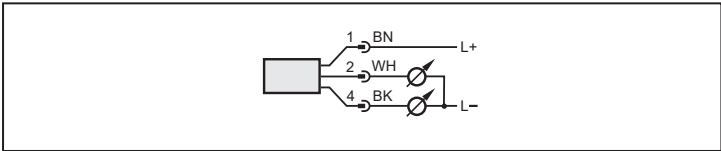
- Operation only with relative air humidity output OUT2:

 - ▶ Connect output OUT1 (pin 4, temperature output) with L-.
- Operation only with temperature output OUT1:

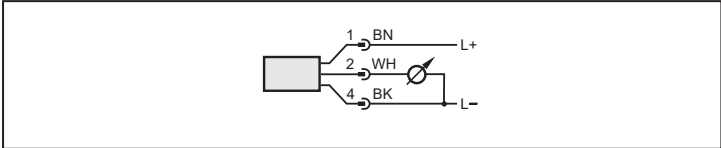
 - ▶ The output OUT2 (pin 2 relative air humidity) is not connected.

Circuit examples:

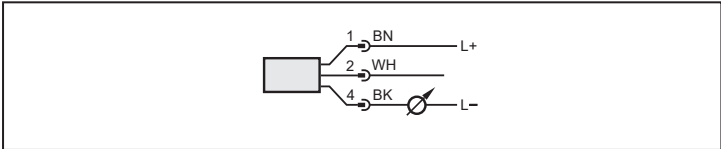
Using both outputs OUT1 and OUT2:



Using only OUT2 (relative air humidity):



Using only OUT1 (temperature):



8 Operation

8.1 Function check

After power-on the device is in the operating mode. It carries out its measurement and evaluation functions and generates output signals according to the measured values.

- Check whether the unit operates correctly.

9 Maintenance / Transport

- ▶ Check the unit at regular intervals and replace it, if necessary.
- ▶ It is not possible to repair the unit.
- ▶ In case of return shipment, ensure that the unit is free from soiling, especially from dangerous and toxic substances.
- ▶ For transport only use appropriate packaging to avoid damage of the unit.
- ▶ After use dispose of the device in an environmentally friendly way in accordance with the applicable national regulations.

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10 Technical data and scale drawing



Technical data sheet and scale drawing at: → www.ifm.com