Honeywell

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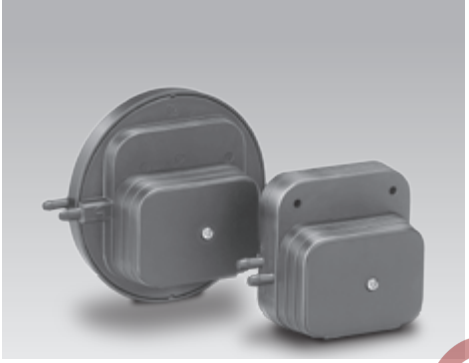
Operating instructions
Pressure switches for air DL 1–50E



Cert. version 05.18

Contents

Safety

Please read and keep in a safe place

Please read through these instructions carefully before installing or operating. Following the installation, pass the instructions on to the operator. This unit must be installed and commissioned in accordance with the regulations and standards in force. These instructions can also be found at www.docuthek.com.

Explanation of symbols

•, **1**, **2**, **3**... = Action
▷ = Instruction

Liability

We will not be held liable for damage resulting from non-observance of the instructions and non-compliant use.

Safety instructions

Information that is relevant for safety is indicated in the instructions as follows:

⚠ DANGER
Indicates potentially fatal situations.

⚠ WARNING
Indicates possible danger to life and limb.

! CAUTION
Indicates possible material damage.

All interventions may only be carried out by qualified gas technicians. Electrical interventions may only be carried out by qualified electricians.

Conversion, spare parts

All technical changes are prohibited. Only use OEM spare parts.

Changes to edition 04.18

The following chapters have been changed:
– Checking the usage
– Certification

Checking the usage

DL 1–50E

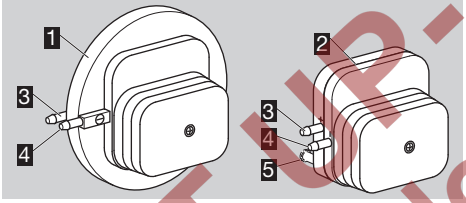
For monitoring positive, negative or differential pressures of non-aggressive gases, air or flue gas.
This function is only guaranteed when used within the specified limits – see page 5 (Technical data).
Any other use is considered as non-compliant.

Type code

Code	Description
DL	Pressure switch for air
	Adjusting range
1	0.2–1 mbar
3	0.3–3 mbar
5[1)]	0.4–5 mbar
10	1.0–10 mbar
50	2.5–50 mbar
E	With flat plugs, tube connection, adjusting screw
T	T-product
G	Gold contacts
-1	AMP plug connection
P	With test tapping point
W	Z-angle bracket

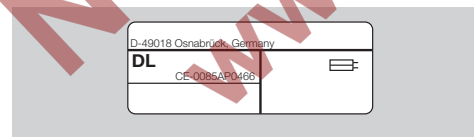
[1)] DL..5ET: adjusting range 0.5 – 5 mbar.

Part designations



1 DL 1–3E
2 DL 5–50E
3 Positive pressure connection
4 Negative pressure connection
5 Test tapping point on DL 5–50E..P

Type label



Max. inlet pressure $p_{max.}$ = withstand pressure, mains voltage, installation position, switching point p_s, ambient temperature, enclosure: see type label.

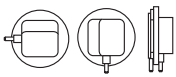
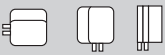
Installation

! CAUTION

Please observe the following to ensure that the DL is not damaged during installation and operation:

– Dropping the device can cause permanent damage. In this event, replace the entire device and associated modules before use.
– Note the max. medium and ambient temperatures, see page 5 (Technical data).
– Condensation must not be allowed to get into the housing (if possible, install pipework with an ascending gradient). Otherwise, there is a risk of icing of condensation at subzero temperatures, the switching point shifting or corrosion in the device which can lead to malfunctions.
– Protect the connections against dirt or moisture in the medium to be measured or the surrounding air. If necessary, install a filter.
– In the case of an uneven mounting surface, secure the pressure switch to the mounting plate or air duct with only two screws on the same side in order to avoid subjecting the pressure switch to mechanical stress.
– When using silicone tubes, only use silicone tubes which have been sufficiently cured. Vapours containing silicone can adversely affect the functioning of electrical contacts.
– In the case of high humidity or aggressive gas components, we recommend using a pressure switch with gold contact due to its higher resistance to corrosion. Closed-circuit current monitoring is recommended under difficult operating conditions.

▷ Installation position – see type label. If installed in another position, the switching point p_s will change.

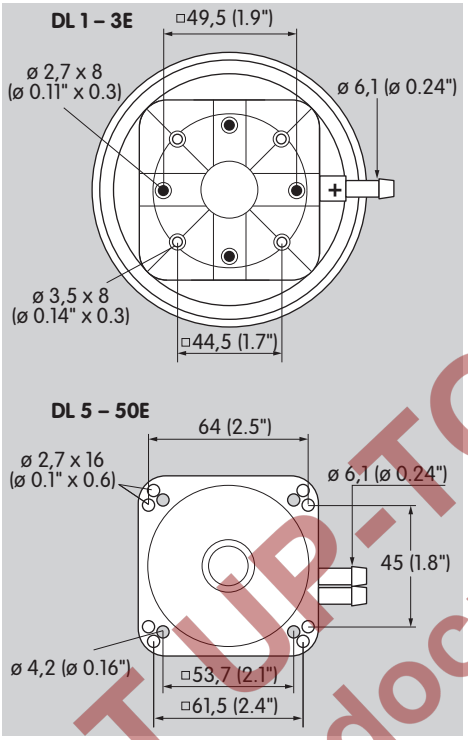
p_s	p_s + 18 Pa [+ 0.071 "WC]	p_s - 18 Pa [- 0.071 "WC]
		
		

▷ Adjustment of switching point p_s, see type label. e.g. DL 5ET: p_s = 100 Pa, installation upside down, 100 Pa - 18 Pa = 82 Pa

1 Installation of the DL using self-tapping screws for 1 mm-thick sheets.

▷ Screws for DL 1–3E: Ø 3.5 x 8 mm or Ø 4 x 8 mm.
Screws for DL 5–50E: Ø 3.5 x 16 mm or M4.

▷ Angle bracket, see page 5 (Accessories).

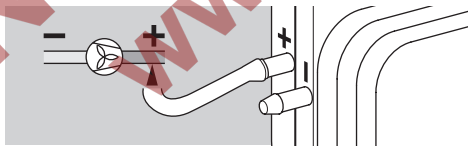


2 Connect the flexible tubes.

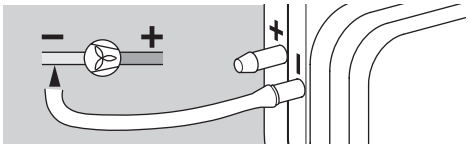
▷ Tube connection Ø 6 mm (0.236").

▷ Max. inlet pressure or differential pressure, see page 5 (Technical data).

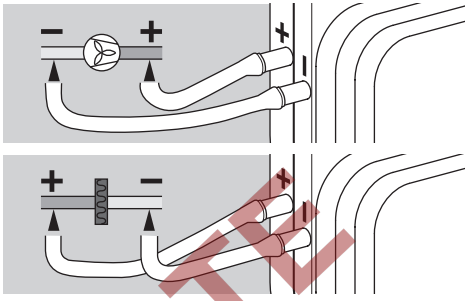
Positive pressure



Negative pressure

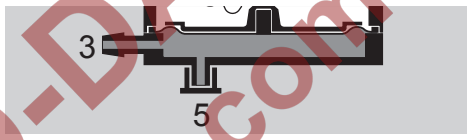


Differential pressure



Test tapping point for pressure measurement

DL 5–50E..P: a measuring instrument can be connected to port **5** or the boiler pressure can be queried.



▷ If port **5** is used for pressure measurement, the sealing cap must be transferred from port **5** to **3**.

Wiring

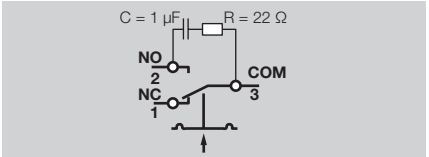
▷ If the DL..G has switched a voltage > 24 V and a current > 0.1 A once, the gold plating on the contacts will have been burnt through. It can then only be operated at this power rating or higher power rating.

! CAUTION

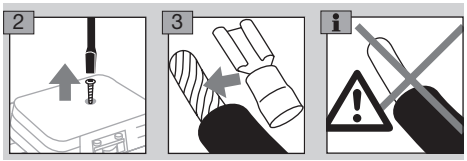
Please observe the following to ensure that the DL is not damaged during operation:

– Note the switching capacity, see page 5 (Technical data).
– Use AMP plugs for wiring.

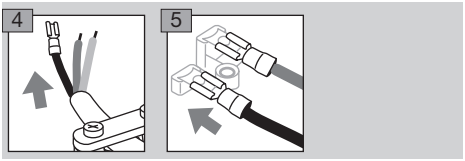
▷ In the case of low switching capacities, such as 24 V, 8 mA, for example, we recommend using an RC module (22 Ω, 1 µF) in air containing silicone or oil.



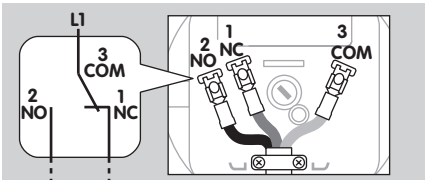
1 Disconnect the system from the electrical power supply.



▷ The cable must be guided under the strain relief facility.



▷ Contacts **3** and **2** close when subject to increasing pressure. Contacts **1** and **3** close when subject to falling pressure. With the NO contact, the NC contact is omitted.

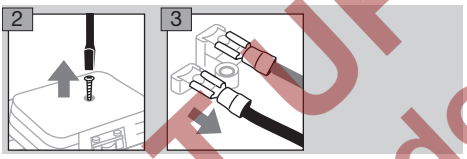


6 Once wiring has been completed, fit the cover again.

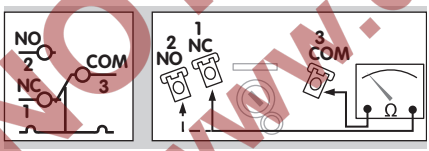
Adjustment

▷ The switching point p_s can be adjusted using the adjusting screw.

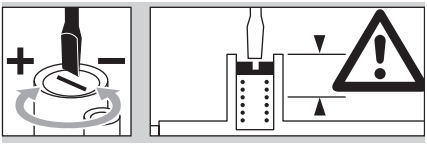
1 Disconnect the system from the electrical power supply.



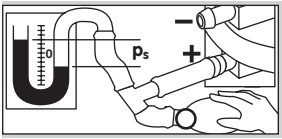
4 Connect an ohmmeter.



5 Adjust switching point p_s using the adjusting screw, see tables in the section entitled “Adjusting range”.



6 Connect a pressure gauge.



7 Apply pressure. In doing so, monitor the switching point on the ohmmeter and the pressure gauge.

▷ If the DL does not trip at the desired switching point, correct the adjusting range. Relieve the pressure and repeat the process.

Adjusting range

Type	Adjusting range* mbar min.	max.	Max. inlet pressure** mbar	Switching differential*** mbar min.	max.
DL 1E, DL 1ET	0.2	1	50	0.1	0.15
DL 3E, DL 3ET	0.3	3	50	0.2	0.3
DL 5E	0.4	5	300	0.25	0.4
DL 5ET	0.5	5	300	0.25	0.4
DL 10E, DL 10ET	1	10	300	0.3	0.4
DL 50E, DL 50ET	2.5	50	300	0.5	1.3

Type	Adjusting range* "WC min.	max.	Max. inlet pressure** "WC	Switching differential*** "WC min.	max.
DL 1E, DL 1ET	0.08	0.4	20	0.04	0.06
DL 3E, DL 3ET	0.12	1.2	20	0.08	0.12
DL 5E	–	–	–	–	–
DL 5ET	0.2	2	117	0.01	0.16
DL 10E, DL 10ET	0.4	4	117	0.12	0.16
DL 50E, DL 50ET	1	20	117	0.2	0.5

* Switching point adjusting tolerance: ± 15% or by agreement.

** Max. inlet pressure = withstand pressure.

*** Mean switching differential at min. and max. setting.

Deviation from the switching point during testing pursuant to EN 1854 Air pressure switches:

	Deviation
DL 1E, DL 1ET	±15% or ±5 Pa [±0.020 "WC]
DL 3E, DL 3ET	±15% or ±6 Pa [±0.024 "WC]
DL 5E–50E, DL 5E–50ET	±15%

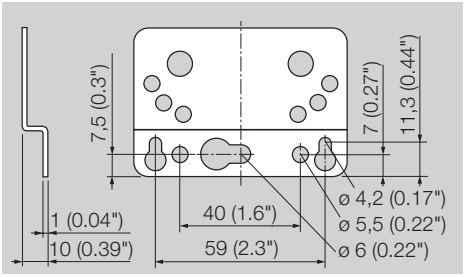
Function check

▷ We recommend a function check once a year.

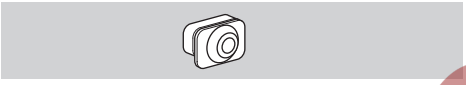
Accessories

Z-angle bracket

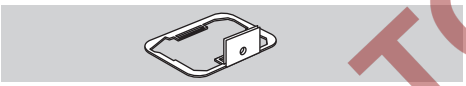
DL 1–3E: Order No.: 74913661,
DL 5–50E: Order No.: 74916158.



Grommet



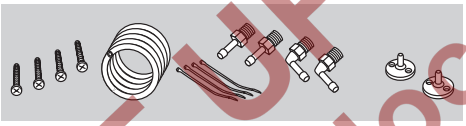
For enclosure IP 42, Order No.: 34328197.



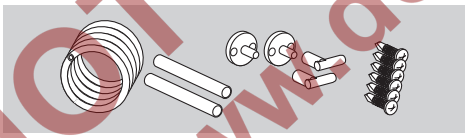
For enclosure IP 44, Order No.: 34330703.

Tube set

To be used with air only.



Order No.: 74912952



Order No.: 74919272

Technical data

Gas type: air or flue gas, no flammable gases, no aggressive gases.
Micro switch to EN 61058-1.
Switching capacity:
DL..: 24 V (min. 0.05 A) to 250 V AC
(max. 5 A, at cos φ 0.6 = 1 A).
DL..G: 5 V (min. 0.01 A) to 250 V AC
(max. 5 A, at cos φ 0.6 = 1 A),
5 V (min. 0.01 A) to 48 V DC (max. 1 A),
DL..T: 30 – 240 V AC, 50/60 Hz,
5 A resistive or
0.5 A inductive (cos φ = 0.6),
DL..TG: < 30 V AC/DC,
0.1 A resistive or
0.05 A inductive (cos φ = 0.6).

If the DL..G (DL..TG) has switched a voltage > 24 V (> 30 V) and a current > 0.1 A at cos φ = 1 or > 0.05 A at cos φ = 0.6 once, the gold plating on the contacts will have been burnt through. It can then only be operated at this power rating or higher power rating.
Contact gap < 3 mm (μ).
Safety class II to VDE 0106-1.
Enclosure to IEC 60529:
IP 10 = any installation position,
IP 21 = electrical connection from below,
IP 42/44 = cover with cable grommet, see page 5 (Accessories).
Diaphragm pressure switch, NBR, silicone-free.
Housing: glass fibre reinforced PBT plastic with low gas release.
Max. inlet pressure = withstand pressure, switching differential, see page 4 (Adjusting range).
Max. medium and ambient temperatures:
-20 to +80°C (-4 to +176°F),
DL..T: -40 to +60°C (-40 to +140°F).
Long-term use in the upper ambient temperature range accelerates the ageing of the elastomer materials and reduces the service life (please contact manufacturer).
Storage temperature:
-20 to +40°C (-4 to +104°F).
Weight:
DL 1E, DL 3E: 145 g (5.1 oz),
DL 5E–50E: 115 g (4 oz).
Recommended tightening torques:
Cover screw: 50 Ncm
Strain relief facility: 60 Ncm

Designed lifetime

This information on the designed lifetime is based on using the product in accordance with these operating instructions. Once the designed lifetime has been reached, safety-relevant products must be replaced.
Designed lifetime (based on date of manufacture) in accordance with EN 13611, EN 1854 for pressure switches: 10 years.
You can find further explanations in the applicable rules and regulations and on the afecor website (www.afecor.org).
This procedure applies to heating systems. For thermoprocessing equipment, observe local regulations.

Logistics

Transport

Protect the unit from external forces (blows, shocks, vibration). On receipt of the product, check that the delivery is complete, see page 2 (Part designations). Report any transport damage immediately.

Storage

Store the product in a dry and clean place.
Storage temperature: see page 5 (Technical data).
Storage time: 6 months in the original packaging before using for the first time. If stored for longer than this, the overall service life will be reduced by the corresponding amount of extra storage time.

Packaging

The packaging material is to be disposed of in accordance with local regulations.

Disposal

Components are to be disposed of separately in accordance with local regulations.

Certification

Declaration of conformity

We, the manufacturer, hereby declare that the product DL with product ID No. CE-0085AP0466 complies with the requirements of the listed Directives and Standards.
Directives:
- 2014/30/EU – EMC
- 2014/35/EU – LVD

Regulation:
- (EU) 2016/426 – GAR

Standards:
- EN 13611:2015+AC:2016
- EN 1854:2010

The relevant product corresponds to the tested type sample.
The production is subject to the surveillance procedure pursuant to Regulation (EU) 2016/426 Annex III paragraph 3.
Elster GmbH

Scan of the Declaration of conformity (D, GB) – see www.docuthek.com

Eurasian Customs Union

The product DL meets the technical specifications of the Eurasian Customs Union.

FM approval

Factory Mutual Research Class: 3510 Flow and pressure safety switches. Designed for applications pursuant to NFPA 85 and NFPA 86.

UR approval

UL 353 Limit control

AGA

Australian Gas Association, Approval No.: 5484

RoHS compliant

Directive on the restriction of the use of hazardous substances (RoHS) in China

Scan of the Disclosure Table China RoHS2 – see certificates at www.docuthek.com

Contact

If you have any technical questions, please contact your local branch office/agent. The addresses are available on the Internet or from Elster GmbH.

We reserve the right to make technical modifications in the interests of progress.

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