

Operating instructions
Pressure switches for air DL..K



Cert. version 05.18

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 11.17

- The following chapters have been changed:
- Checking the usage
 - Declaration of conformity

Checking the usage

DL..K

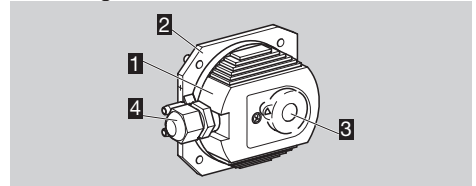
For monitoring positive, negative or differential air or flue gas pressures.

This function is only guaranteed when used within the specified limits – see page 3 (Technical data). Any other use is considered as non-compliant.

Type code

Code	Description
DL	Pressure switch for air
3,3– 40	Max. setting in Pa
K	With tube connection and hand wheel for adjustment
T	T-product
G	Gold contacts
	Electrical connection
-1	via AMP plugs
-2	via screw terminals, 1/2" NPT
-3	via screw terminals
K2	Red/green pilot LED 24 V DC/AC
N	Blue pilot lamp 120 V AC
T	Blue pilot lamp 230 V AC
T2	Red/green pilot LED 230 V AC
W	Z-angle bracket

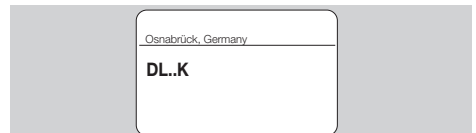
Part designations



- 1** Upper housing section with cover
- 2** Lower housing section
- 3** Hand wheel
- 4** M16 cable gland

Type label

Max. inlet pressure p_{max} = withstand pressure, mains voltage, switching pressure, ambient temperature and enclosure: see type label.



Installation

! CAUTION

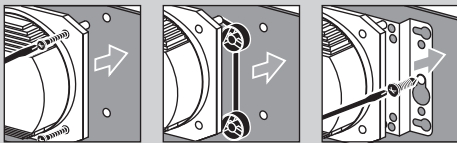
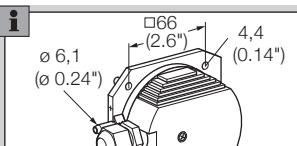
Please observe the following to ensure that the DL..K is not damaged during installation and operation:

- Dropping the device can cause permanent damage. In this event, replace the entire device and associated modules before use.
- 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.
- 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.
- Protect the connections against dirt or moisture in the medium to be measured or the surrounding air. If necessary, install a filter.
- 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 case of highly fluctuating pressures, install a damping nozzle.

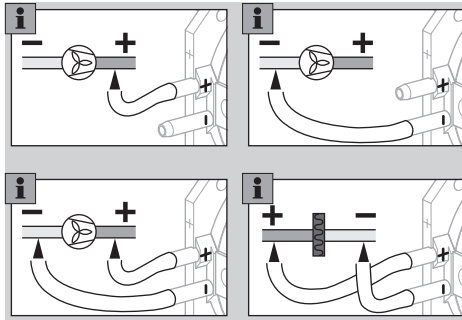
- ▷ Installation in the vertical or horizontal position, or upside down, preferably with vertical diaphragm. If installed in a vertical position, the switching point p_S will correspond to the scale value SK. If installed in another position, the switching point p_S will change and no longer correspond to the set scale value SK. Switching point p_S must be checked.

$p_S = SK$	SK + 13 Pa [+ 0.052 "WC]	SK - 13 Pa [- 0.052 "WC]

- 1 Install the DL using screws, a securing clip or an angle bracket.



- ▷ Tube connection: $\varnothing 6 \text{ mm}$ (0.236").
- ▷ Max. inlet pressure $p_{\text{max}} = 5000 \text{ Pa}$ (20 "WC).



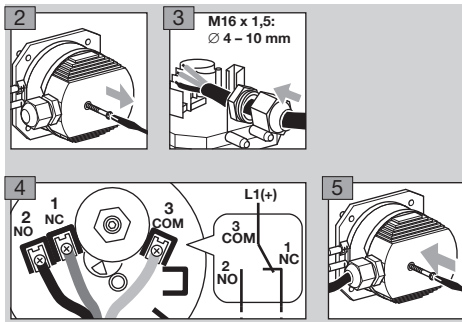
Wiring

! CAUTION

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

- If the DL..G (DL..TG) has switched a voltage $> 24 \text{ V}$ ($> 30 \text{ V}$) and a current $> 0.1 \text{ A}$ at $\cos \varphi = 1$ or $> 0.05 \text{ A}$ at $\cos \varphi = 0.6$ 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.
- Note the switching capacity, see page 3 (Technical data).
- ▷ In the case of high humidity, 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.
- ▷ 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.



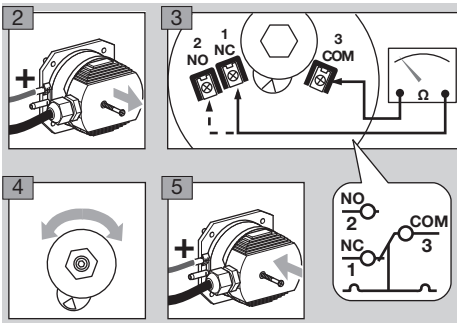
Adjustment

- ▷ The switching pressure can be adjusted using the hand wheel and scale. The switching pressure differs from the adjusted setpoint by a maximum of $\pm 15\%$, when it has been set for increasing pressure and with a vertical diaphragm.

Type	Adjusting range [Pa]		Mean switching differential [Pa]		Deviation from the switching point during testing pursuant to EN 1854
	min.	max.	min.	max.	
DL 3,3K	20	330	8	20	$\pm 7 \text{ Pa}/\pm 15\%$
DL 3,5K	30	350	10	20	$\pm 5 \text{ Pa}/\pm 15\%$
DL 4,5K	30	500	12	25	$\pm 5 \text{ Pa}/\pm 15\%$
DL 5,1K	100	510	15	30	$\pm 15\%$
DL 8K	50	800	17	30	$\pm 14 \text{ Pa}/\pm 15\%$
DL 11K	100	1100	20	35	$\pm 20 \text{ Pa}/\pm 15\%$
DL 16K	400	1600	30	40	$\pm 15\%$
DL 24K	200	2400	45	55	$\pm 40 \text{ Pa}/\pm 15\%$
DL 40K	500	4000	70	90	$\pm 15\%$

Type	Adjusting range [°WC]		Mean switching differential [°WC]		Deviation from the switching point during testing pursuant to EN 1854
	min.	max.	min.	max.	
DL 3,5KT	0.12	1.4	0.04	0.08	$\pm 0.02 \text{ °WC}/\pm 15\%$
DL 4,5KT	0.12	2	0.05	0.10	$\pm 0.02 \text{ °WC}/\pm 15\%$
DL 8KT	0.20	3.2	0.07	0.12	$\pm 0.06 \text{ °WC}/\pm 15\%$
DL 11KT	0.4	4.4	0.08	0.14	$\pm 0.08 \text{ °WC}/\pm 15\%$
DL 16KT	1.6	6.4	0.12	0.16	$\pm 15\%$
DL 24KT	0.8	9.6	0.18	0.22	$\pm 0.16 \text{ °WC}/\pm 15\%$
DL 40KT	2.0	16.0	0.28	0.36	$\pm 15\%$

- 1 Disconnect the system from the electrical power supply.



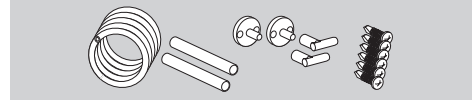
Maintenance

- ▷ We recommend a function check once a year.

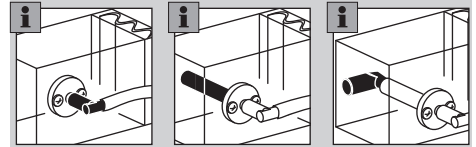
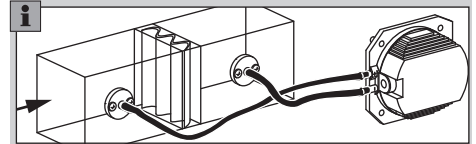
Accessories

Angle brackets, securing clips and other accessories, see Technical Information DL (D, GB, F) – www.docuthek.com

Tube set



2 m PVC tube, 2 duct connection flanges with screws, including angle connectors and extension. Order No.: 74919272.



Technical data

Gas types: air or flue gas, no flammable gases, no aggressive gases.

Max. inlet pressure p_{\max} = withstand pressure: 5 kPa,

differential pressure: 5 kPa.

Micro switch to EN 61058-1.

Switching capacity:

DL..K: 24 V (min. 0.05 A) to 250 V AC (max. 5 A, at $\cos \varphi 0.6 = 1$ A),

DL..KG: 5 V (min. 0.01 A) to 250 V AC (max. 5 A, at $\cos \varphi 0.6 = 1$ A), 5 V (min. 0.01 A)

to 48 V DC (max. 1 A),

DL..KT: 30–240 V AC, 50/60 Hz, 5 A resistive or 0.5 A inductive ($\cos \varphi = 0.6$),

DL..KTG: < 30 V AC/DC, 0.1 A resistive or 0.05 A inductive ($\cos \varphi = 0.6$).

Contact gap < 3 mm (μ).

Ambient temperatures:

DL..K: -20 to +85°C (-4 to +185°F),

DL..KT: -40 to +60°C (-40 to +140°F).

Storage and transport temperature:

-20 to +40°C (-4 to +104°F).

Cable diameter: 0.5 to 1.8 mm

(AWG 24 to AWG 13).

Line entrance: M16 x 1.5, clamping range: diameters of 4 to 10 mm.

Electrical connection type: screw terminals.

Recommended tightening torque:

Component	Tightening torque [Ncm]
Cover screw	60
M16x1.5 cable gland	50
Clamping terminal screws	80

Enclosure to IEC 60529: IP 54.

Diaphragm: tempered LSR diaphragm system.

Weight: 125 g (4.4 oz).

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 1 (Part designations). Report any transport damage immediately.

Storage

Store the product in a dry and clean place.

Storage temperature: see page 3 (Technical data).

Storage time: 6 months 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.

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.

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

RoHS compliant, Eurasian Customs Union, UL listed, FM and AGA approved



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

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