Air pressure switch DL..K

Technical Information · GB
4.2.1.6 Edition 11.11

- Precision differential pressure switch
- Monitoring of air, flue gas and other non-aggressive gases
- High switching point stability
- Switching point selection via hand wheel
- Screw terminals or AMP plugs for electrical connections
- Flexible mounting options
- All connections accessible from one side
- EC type-tested and certified
- UL listed, FM, UR and AGA approved
- Certified pursuant to GOST-TR
- RoHS 2002/95/EC

Contents

= To be continued

1 Application

Pressure switches for air DL..K can be used as positive pressure switches, vacuum sensors or differential pressure switches for air, flue gas and other non-aggressive gases. They monitor extremely low pressure differentials and trigger switch-on, switch-off or switch-over operations if a set value is reached.

Fields of application include fan monitoring on calorific value boiler units or on atmospheric wall-mounted units with flue gas fan, fan monitoring and filter monitoring on intake and extract ventilation systems, on air-conditioning systems, in laboratories and in kitchens and closed-loop control of butterfly valves for air and fire dampers for instance.

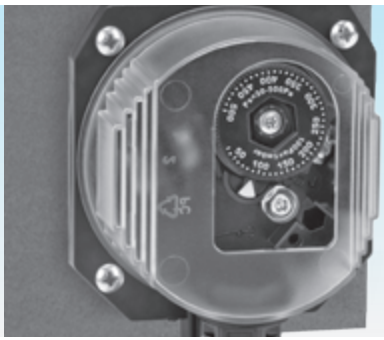
The pneumatic and electrical connections are accessible from the same side in order to ensure space-saving and easy-to-fit installation.

1.1 Examples of application

Fan monitoring in laboratories

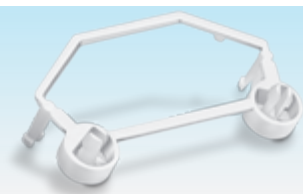
Filter monitoring in kitchens

1.1.1 Simple mounting



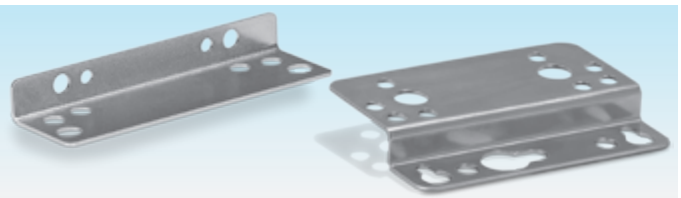
Simple front mounting.

1.1.2 Mounting without the need for tools or screws



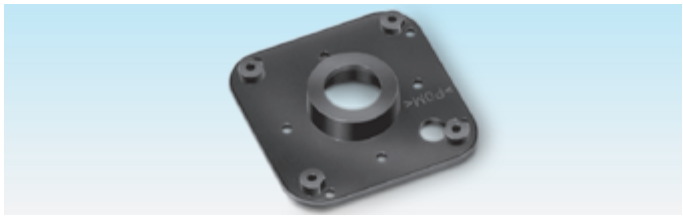
The securing clip S allows the pressure switch to be easily installed and removed. Only two holes in the mounting plate or air duct are required for secure mounting. Securing clip S, see page 11 (Accessories).

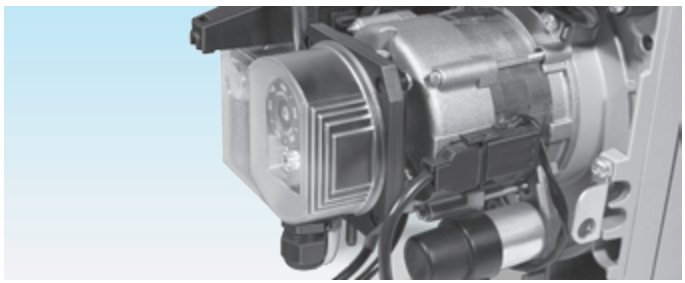
1.1.3 Rugged, locked mounting



The L-shaped or Z-shaped angle bracket offers diverse mounting options, even with only one screw, and fast installation and removal. The angle bracket increases the distance between the pressure switch and warm boiler walls. Fastening set, see page 11 (Accessories).

1.1.4 Mounting directly on the fan motor





The pressure switch can be installed in a space-saving manner using the motor flange adapter. It is not necessary to drill holes for mounting. Motor flange adapter, see page 11 (Accessories).

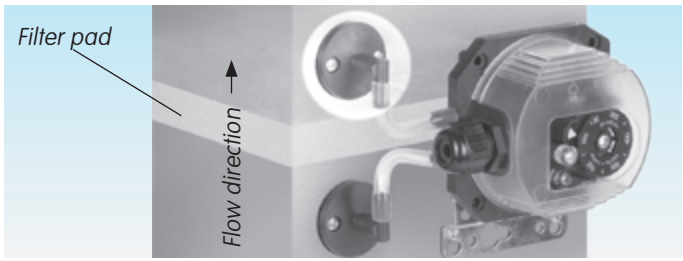
1.1.5 Protection against pressure surges

The damping nozzle compensates for pressure fluctuations and pressure surges. A brief pressure surge occurs in the air supply line when igniting a burner, for example. Damping nozzle, see page 11 (Accessories).

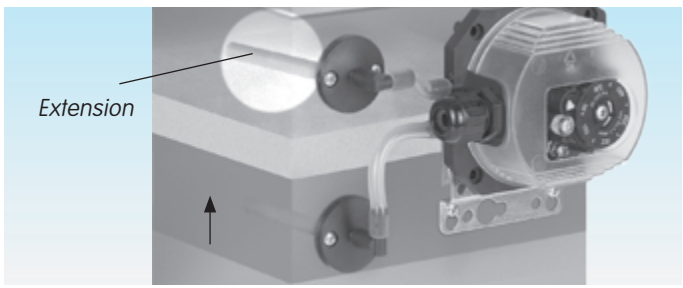
1.1.6 Clearer handling in complex installations

In order to facilitate reading for pressure switches with the same switching point setting, for example, a scale mark can be used. The scale mark can simply be plugged on and is available in different colours as a colour coordination set, see page 11 (Accessories).

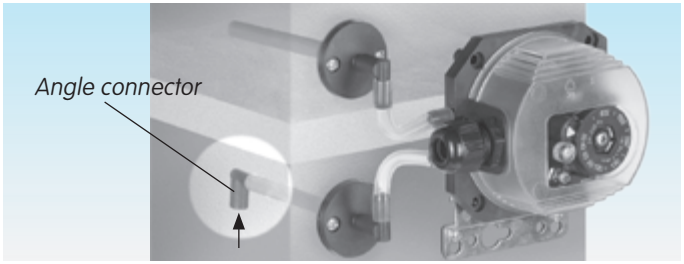
1.1.7 Tube set with diverse possible applications



Duct connection flanges and angle connectors connect the pressure switch and pressure test point with no kinks.



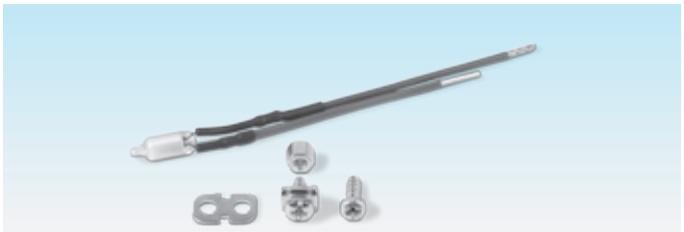
Using the extension, the pressure switch can be used on insulated and lagged ducts.

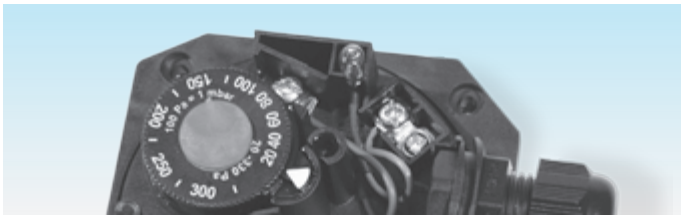


The angle connector reinforces the Δp signal if it is too low for the pressure switch adjusting range.

Tube set, see page 11 (Accessories).

1.1.8 Easier diagnosis and maintenance





Either a red or a blue pilot lamp, or a red-greed LED (24 V/230 V) indicates the switching status of the pressure switch, see page 11 (Accessories).

2 Certification

2.1 EC type-tested and certified

CE

pursuant to

– Gas Appliances Directive (90/396/EEC) in conjunction with EN 1854,
– Low Voltage Directive (2006/95/EC) in conjunction with the relevant standards.

2.2 FM approval

FM APPROVED

Factory Mutual Research Class: 3510 Flow and pressure safety switches.

Designed for applications pursuant to NFPA 85 and NFPA86. www.fmglobal.com ➔ Products and Services ➔ Product Certification ➔ Approval Guide

2.3 UR approval

c US

DL..KT-1 (AMP plug connection): UL 353 Limit control standard.

Underwriters Laboratories – www.ul.com ➔ Certification

2.4 UL approval

c UL US LISTED

DL..KT-3: UL 353 Limit control standard.

Underwriters Laboratories – www.ul.com ➔ Certification

2.5 AGA approval

AGA

Australian Gas Association, Approval No.: 5484

http://www.aga.asn.au/product_directory

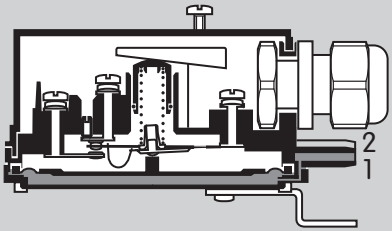
2.6 Approval for Russia

GOST

Certified by Gosstandart pursuant to GOST-TR.

Approved by Rostekhnadzor (RTN).

3 Function



The air apressure switch DL..K switches in the event of increasing or decreasing pressure. Once the set switching point is reached, a micro switch is activated in the DL..K which is designed as a change-over contact.

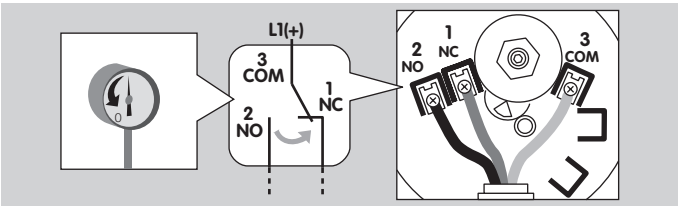
The switching pressure is adjusted against a spring force using a hand wheel.

The positive pressure is measured with port 1 (+) underneath the diaphragm, for instance, for checking fan function.

The negative pressure is measured with port 2 (–) above the diaphragm, for instance, for monitoring air locks and checking fan function.

For differential pressure measurement, the higher absolute pressure must be connected to 1 and the lower to 2. Differential pressure measurement is designed for instance, for safeguarding an air flow rate or for monitoring filters and fans.

3.1 Connection diagram



With the change-over contact, the contact switches from NC 1 to NO 2 for increasing pressure control, from NO 2 to NC 1 for decreasing pressure control.

4 Selection

4.1 Selection table

Type	3,3[1]	3,5	4,5	5,1[1]	8	10	11	16	24	40	K	T	G	-1[2]	-3[3]	K2	N	T	T2
DL	●	●	●	●	●	●	●	●	●	●	●	○	○	○	●	○	○	○	○

Order example

DL 8KG-3

[1] Not available as a T-product.

[2] DL..KT with AMP plugs is UR approved.

[3] DL..KT with screw terminals is UL listed.

● = *standard*, ○ = *available*

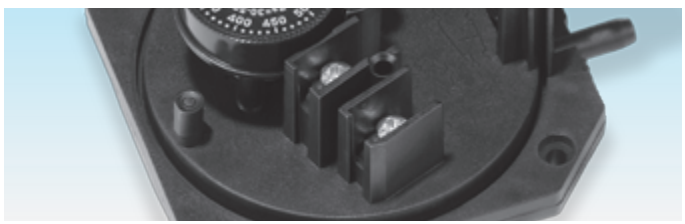
4.1.1 Type code

Code	Description
DL	Air pressure switch
	Adjusting range
3,3	20 – 330 Pa
3,5	30 – 350 Pa
4,5	30 – 500 Pa
5,1	100 – 510 Pa
8	50 – 800 Pa
10	100 – 1000 Pa
11	100 – 1100 Pa
16	400 – 1600 Pa
24	200 – 2400 Pa
40	500 – 4000 Pa
K	Tube connection and hand wheel for adjustment
T	T-product
G	Gold contacts
-1	AMP plug connection
-3	Electrical connection 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

4.1.2 Electrical connection

DL..K-1 for wiring with an AMP plugs

DL..K-3 for wiring with screw terminals



5 Project planning information

5.1 Installation

Ensure that there is sufficient space for installing the pressure switch and for adjusting and reading the hand wheel.

Protect the connections against dirt or moisture in the medium to be measured and the surrounding air. We recommend that a filter be installed upstream of every system.

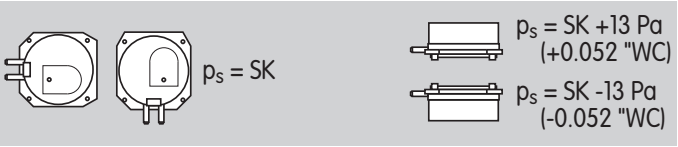
Avoid subjecting the DL to strong or violent vibrations.

Condensation or vapours containing silicone must not be allowed to get into the housing. At subzero temperatures malfunctions/failures due to icing of condensation can occur.

24 V: when using silicone tubes, only use silicone tubes which have been sufficiently cured. Otherwise SiO_2 can build up on the contacts and can lead to contact failures.

In the case of uneven ground, secure the pressure switch to the mounting plate or air duct with only two screws in order to avoid stresses on the pressure switch.

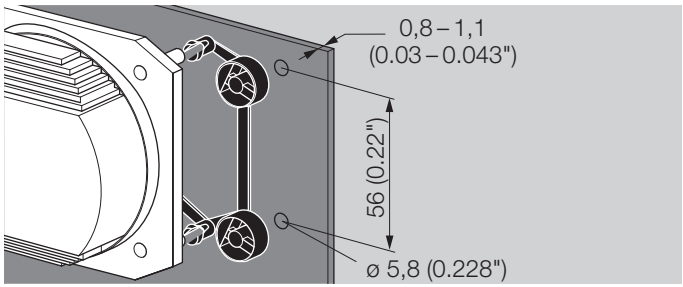
5.1.1 Installation position



The unit can be installed in any position. The switching pressure p_s only corresponds to the scale value SK when the diaphragm is vertical.

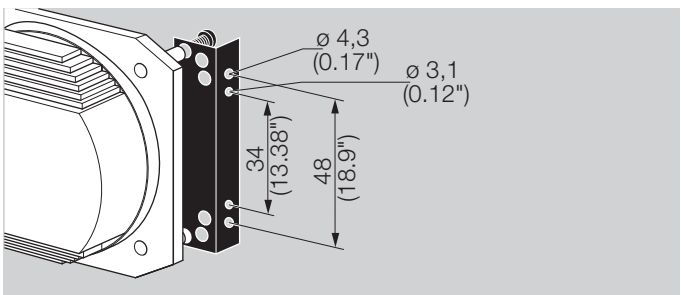
6 Accessories

6.1 Securing clip S



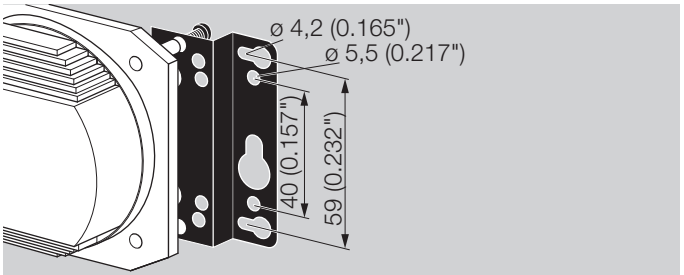
Order No.: 34335764

6.2 L-angle bracket



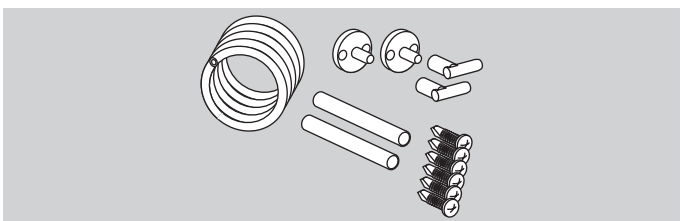
Order No.: 74919825

6.3 Z-angle bracket



Order No.: 74919824

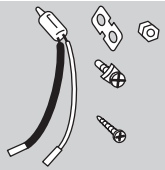
6.4 Tube set



Tube set with 2 m PVC tube, 2 duct connection flanges with screws, R 1/4 and R 1/8 connecting nipples:
Order No.: 74919272.

Tube set, including angle connectors and extension:
Order No.: 74912952.

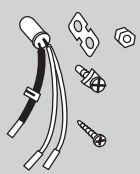
6.5 Pilot lamp set red or blue



Pilot lamp red:
110/120 V AC, I = 1.2 mA, Order No.: 74920430;
220/250 V AC, I = 0.6 mA, Order No.: 7492042.

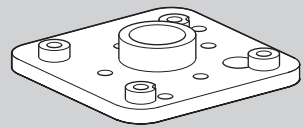
Pilot lamp blue:
110/120 V AC, I = 1.2 mA, Order No.: 74916121;
220/250 V AC, I = 0.6 mA, Order No.: 74916122.

6.6 LED set red/green



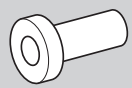
24 V DC, I = 16 mA; 24 V AC, I = 8 mA, Order No.: 74921089;
230 V AC, I = 0.6 mA, Order No.: 74923275.

6.7 Motor flange adapter



Order No.: 74920415

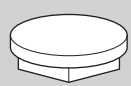
6.8 Damping nozzle



∅ = 0.8 mm (0.03")

Order No.: 35451346

6.9 Colour coordination set



The scale mark is available in each case as a 5-piece set.

Colour coordination set blue, Order No.: 74921726,
Colour coordination set yellow, Order No.: 74921727.

7 Technical data

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

Micro switch to EN 61058-1, switching capacity:

DL..K: 24 V (min. 0.05 A) to 250 V AC (max. 5 A, with cos φ 0.6 = 1 A)

DL..KG: 5 V (min. 0.01 A) to 250 V AC (max. 5 A, with cos φ 0.6 = 1 A)
12 V (min. 0.01 A)
up 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 φ 0.6)

DL..KTG: < 30 V AC/DC
0.1 A resistive or
0.05 A inductive (cos φ 0.6)

If the DL..KG (DL..KTG) has switched a voltage > 24 V (> 30 V) and a current > 0.1 A at φ = 1 or > 0.05 A at 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).

Line entrance: M16 × 1.5,

Cable diameter: 4.5 to 10 mm.

DL..KT: 1/2" NPT conduit connection.

Enclosure to IEC 60529: IP 54.

Safety class II to VDE 0106-1.

Diaphragm:
tempered LSR diaphragm system.

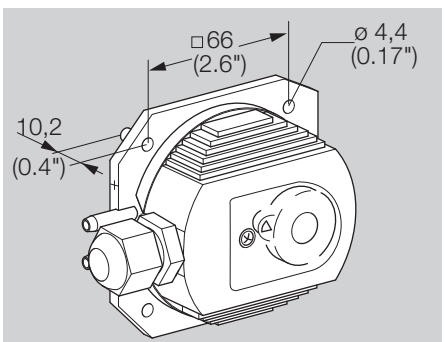
Max. inlet pressure p_U or differential pressure: 5000 Pa (20.07 "WC).

Permitted ambient temperature in operation:
DL..K: -15 to +85°C (+5 to +185°F),
DL..KT: -40 to +60°C (-40 to +140°F).

Storage and transport temperature:
-40 to +85°C (-40 to +185°F).

Weight: 200 g (7.05 oz).

7.1 Dimensions



7.2 Adjusting range, switching hysteresis

Type	Adjusting range				Switching hysteresis				Deviation from the switching point during testing pursuant to EN 1854 or by agreement	
	Pa		"WC		Pa		"WC			
	min.	max.	min.	max.	min.	max.	min.	max.		
DL 3,3 K	20	330	0.08	1.3	8	20	0.03	0.08	±7 Pa/±15%	±0.028 "WC/±15%
DL 3,5K	30	350	0.12	1.4	10	20	0.04	0.08	±5 Pa/±15%	±0.02 "WC/±15%
DL 4,5K	30	500	0.12	2.0	12	25	0.05	0.10	±5 Pa/±15%	±0.02 "WC/±15%
DL 5,1 K	100	510	0.4	2.0	15	30	0.06	0.12	±15%	±15%
DL 8K	50	800	0.2	3.2	17	30	0.07	0.12	±14 Pa/±15%	±0.06 "WC/±15%
DL 11K	100	1100	0.4	4.4	20	35	0.08	0.14	±20 Pa/±15%	±0.08 "WC/±15%
DL 16K	400	1600	1.6	6.4	30	40	0.12	0.16	±15%	±15%
DL 24K	200	2400	0.8	9.6	45	55	0.18	0.22	±40 Pa/±15%	±0.16 "WC/±15%
DL 40K	500	4000	2.0	16.0	70	90	0.28	0.36	±15%	±15%

8 Maintenance cycles

We recommend a function check once a year.

Feedback

Finally, we are offering you the opportunity to assess this "Technical Information (TI)" and to give us your opinion, so that we can improve our documents further and suit them to your needs.

Clarity

- ○ Found information quickly
- ○ Searched for a long time
- ◉ Didn't find information
  What is missing? sdvsdv
- ○ No answer

Comprehension

- ○ Coherent
- ○ Too complicated
- ○ No answer

Scope

- ○ Too little
- ○ Sufficient
- ○ Too wide
- ○ No answer

Use

- ☐ To get to know the product
- ☐ To choose a product
- ☐ Planning
- ☐ To look for information

Navigation

- ○ I can find my way around
- ○ I got "lost"
- ○ No answer

My scope of functions

- ○ Technical department
- ○ Sales
- ○ No answer

Remarks

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(Adobe Reader 7 or higher required)

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