

# Pressure switches for air DL 2E, DL 4E, DL 14E, DL 35E

## OPERATING INSTRUCTIONS

Cert. Version 05.18 · Edition 04.23 · EN · 03250191



### 1 SAFETY

#### 1.1 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](http://www.docuthek.com).

#### 1.2 Explanation of symbols

**1, 2, 3, a, b, c** = Action

→ = Instruction

#### 1.3 Liability

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

#### 1.4 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.

#### 1.5 Conversion, spare parts

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

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## 2 CHECKING THE USAGE

### DL 2-35E

For monitoring positive, negative or differential pressures of air, flue gas or other non-aggressive gases. This function is only guaranteed when used within the specified limits – see page 5 (8 Technical data). Any other use is considered as non-compliant.

#### 2.1 Type code DL 2-35E

<b>DL</b>	Pressure switch for air
<b>2</b>	Adjusting range 20-200 Pa
<b>4</b>	Adjusting range 50-400 Pa
<b>14</b>	Adjusting range 300-1400 Pa
<b>35</b>	Adjusting range 300-1400 Pa
<b>E</b>	With tube connection, adjusting screw
<b>H</b>	Temperature range -40 – +110 °C (-40 – +230 °F)
<b>G</b>	With gold contacts
<b>-1</b>	AMP plug connection
<b>W</b>	Z-angle bracket

*DL 2: Switching point 20-30 Pa when installed upside down.*

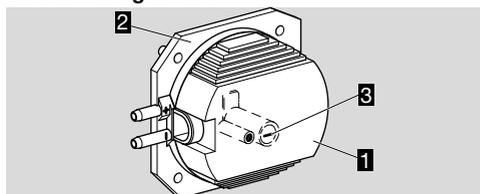
*Adjusting range: DL...2EH: 45-200 Pa, DL...4EH: 70-400 Pa.*

#### 2.2 Type code DL 2-35ET

<b>DL</b>	Pressure switch for air
<b>2</b>	Adjusting range 0.12-0.8 "WC (30-200 Pa)
<b>4</b>	Adjusting range 0.2-1.6 "WC (50-400 Pa)
<b>14</b>	Adjusting range 1.2-5.6 "WC (300-1400 Pa)
<b>35</b>	Adjusting range 4.8-14 "WC (1200-3500 Pa)
<b>E</b>	With tube connection, adjusting screw
<b>T</b>	T-product
<b>G</b>	With gold contacts for voltages 12-250 V
<b>-1</b>	AMP plug connection (UR recognized)

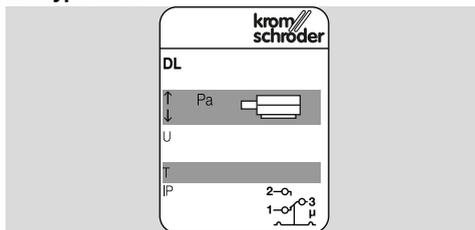
*DL 2: Switching point 0.08-0.12 "WC when installed upside down.*

#### 2.3 Part designations



- 1 Cover
- 2 Housing
- 3 Adjusting screw

## 2.4 Type label



- Max. inlet pressure  $p_{max}$ . = withstand pressure, mains voltage, switching pressure, ambient temperature, enclosure: see type label.
- Installation position: see switching pressure (Pa) on type label.

## 3 INSTALLATION

### ⚠ CAUTION

Please observe the following to ensure that the unit is not damaged during installation:

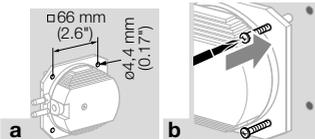
- Dropping the device can cause permanent damage. In this event, replace the entire device and associated modules before use.
- Note the max. medium and ambient temperatures, see page 5 (8 Technical data). Otherwise, there is a risk of icing of condensation at subzero temperatures, the switching point shifting or corrosion in the device which can lead to malfunctions.
- Condensation must not be allowed to get into the housing.
- Protect the connections against dirt or moisture in the medium to be measured or the surrounding air. If necessary, install a filter.
- Avoid strong impact on the unit.
- In case of highly fluctuating pressures, install a damping nozzle.
- 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.
- Vapours containing silicone can adversely affect the functioning of electrical contacts. When using silicone tubes, only use silicone tubes which have been sufficiently cured.
- 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.

- Installation position as required; adjustment as indicated on the type label. If installed in another position, the switching point  $p_S$  will change.

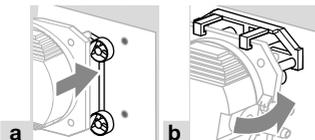
$p_s = SK$	SK + 13 Pa [+ 0,052 "WC]	SK - 13 Pa [- 0,052 "WC]
DL 2 - 35E		

1 Install the DL 2-35E using screws, a securing clip or an angle bracket.

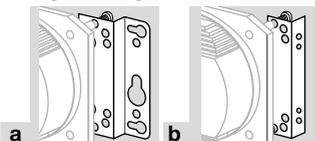
### Securing with screws



### Securing clip S/D



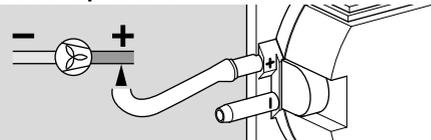
### Z-angle/L-angle bracket



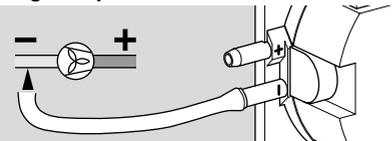
2 Connect the flexible tube. 6 mm (0.236") connection diameter.

→ Max. inlet pressure or differential pressure, see page 4 (5.1 Adjusting range).

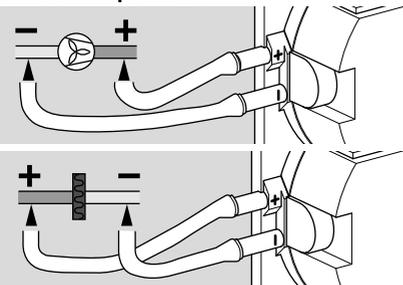
### Positive pressure



### Negative pressure



### Differential pressure



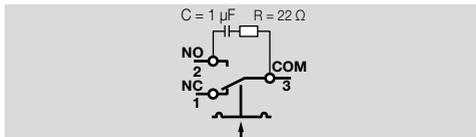
## 4 WIRING

→ If the pressure switch 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.

### ⚠ CAUTION

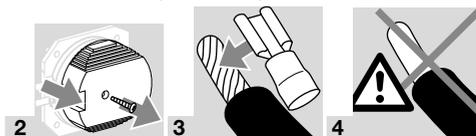
– To ensure that the DL 2-35E is not damaged during operation, note the switching capacity, see page 5 (8 Technical data).

In the case of low switching capacities, such as 24 V, 8 mA, for example, we recommend using an RC module (22  $\Omega$ , 1  $\mu\text{F}$ ) in air containing silicone or oil.

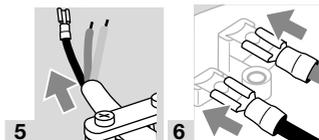


1 Disconnect the system from the electrical power supply.

→ Use AMP plugs for wiring.

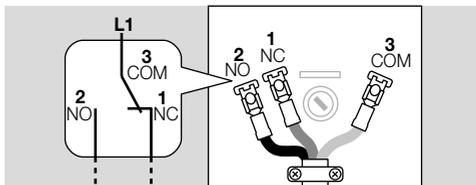


→ The cable must be guided under the strain relief facility.



7 Wire as shown on the connection diagram.

→ 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.

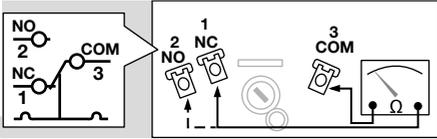


8 Reinstall the housing cover after wiring (see page 5 (8 Technical data) for tightening torque) or continue with the setting work.

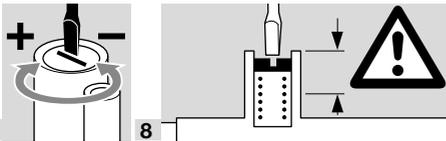
## 5 ADJUSTMENT

The switching point  $p_S$  can be adjusted using the adjusting screw.

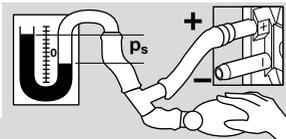
- 1 Disconnect the system from the electrical power supply.
- 2 Unscrew the housing cover.
- 3 Carefully remove the AMP plugs from the contacts.
- 4 Connect an ohmmeter.



- 5 Adjust switching point  $p_S$  using the adjusting screw, see tables in the section entitled "Adjusting range".



- 7 Connect a pressure gauge.



- 10 Apply pressure. In doing so, monitor the switching point on the ohmmeter and the pressure gauge.
- 12 If the DL 2-35E does not trip at the desired switching point, correct the adjusting range using the adjusting screw. Relieve the pressure and repeat the process.
- 13 After successfully completing the settings, slide the AMP plugs back onto the contacts and install the housing cover (see page 5 (8 Technical data) for tightening torque).

### 5.1 Adjusting range

Type	Adjusting range <sup>1)</sup> [Pa]		Mean switching differential <sup>2)</sup> [Pa]	
	min.	max.	min.	max.
DL 2E	20	200	15	25
DL 2ET	30	200	15	25
DL 2EH	45	200	15	25
DL 4E, DL 4ET	50	400	20	50
DL 4EH	70	400	20	50
DL 14E, DL 14ET	300	1400	30	60
DL 35E, DL 35ET	1200	3500	60	100

Type	Adjusting range <sup>1)</sup> ["WC]		Mean switching differential <sup>2)</sup> ["WC]	
	min.	max.	min.	max.
DL 2ET	0.12	0.8	0.05	0.10
DL 4ET	0.2	1.6	0.08	0.20
DL 14ET	1.20	5.6	0.12	0.24
DL 35ET	4.8	14.1	0.24	0.40

1) Adjusting tolerance  $\pm 15\%$  of the scale value, but min.  $\pm 10$  Pa [ $\pm 0.04$  "WC].

2) Mean switching differential at min. and max. setting or by agreement.

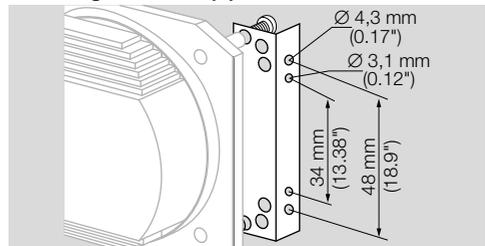
Type	Deviation from the switching point during testing pursuant to EN 1854 Air pressure switches
DL 2E, DL 2ET	$\pm 15\%$ /min. $\pm 6$ Pa [ $\pm 0.02$ "WC]
DL 2EH	$\pm 15\%$ /min. $\pm 8$ Pa
DL 4E, DL 4ET	$\pm 15\%$ /min. $\pm 8$ Pa [ $\pm 0.03$ "WC]
DL 4EH	$\pm 15\%$ /min. $\pm 12$ Pa
DL 14E, DL 14ET	$\pm 15\%$ /min. $\pm 40$ Pa [ $\pm 0.16$ "WC]
DL 35E, DL 35ET	$\pm 15\%$ /min. $\pm 90$ Pa [ $\pm 0.36$ "WC]

## 6 FUNCTION CHECK

We recommend a function check once a year.

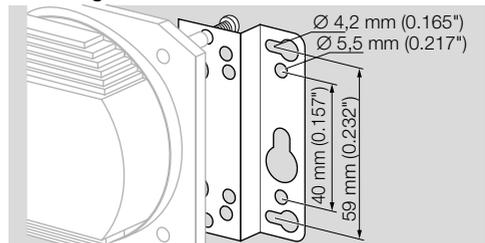
## 7 ACCESSORIES

### 7.1 L-angle bracket (A)



Shape A, Order No.: 74919825.

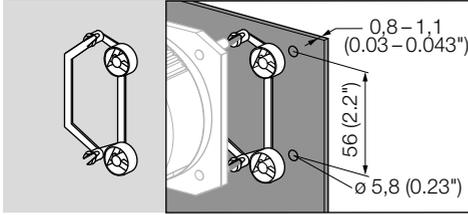
### 7.2 Z-angle bracket



Order No. 74919824.

### 7.3 Securing clip S

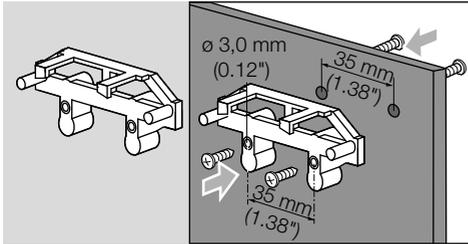
Only two holes in the mounting plate or air duct are required for secure mounting.



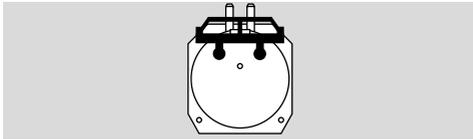
Order No.: 34335764.

### 7.4 Securing clip D

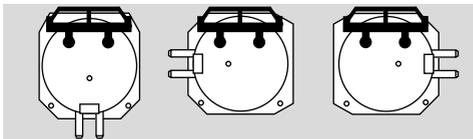
For pressure-resistant mounting, the D clip is fitted to the mounting plate from the front or from the back. Simply push the pressure switch onto the clip.



For attachment to the side of the pressure port: white clip. Order No.: 74921513.

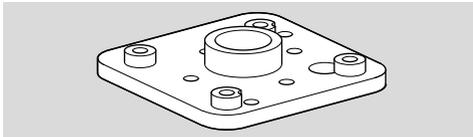


For attachment to the three other sides: blue clip. Order No.: 74921512.



### 7.5 Motor flange adapter

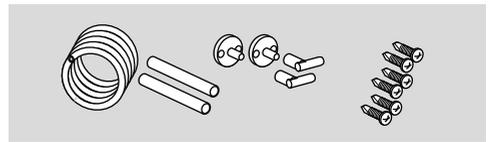
Set including retaining screws for direct mounting on the fan motor.



Order No.: 74920415

### 7.6 Tube set

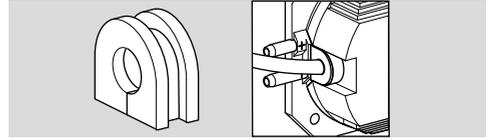
To be used with air only.



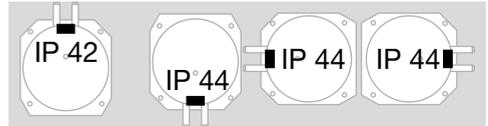
With 2 m PVC tube, 2 duct connection flanges with screws, 2 x 90 mm extensions, 2 angle connectors for DL

Order No.: 74919272.

### 7.7 DL 2-35E: grommet



Grommet for enclosure IP 42/IP 44 depending on the installation position.



Installation in the horizontal position and upside down: IP 44

Order No.: 34919801

## 8 TECHNICAL DATA

### Ambient conditions

Enclosure to IEC 60529:

IP 00 = without cover,

IP 10 = any installation position with cover,

IP 21 = opening in cover points downwards,

IP 42/44 = cover with cable grommet.

Permitted ambient temperature in operation:

DL..E: -20 to +85°C (-4 to +185°F),

DL..EH: -40 to +110°C (-40 to +230°F),

DL..T: -40 to +60°C (-40 to +140°F).

Storage and transport temperatures:

DL..E, DL..T: -20 to +40°C (-4 to +104°F),

DL..EH: -20 to +60°C (-4 to +140°F).

Icing, condensation and dew in and on the unit are not permitted.

Safety class II to VDE 0106-1.

This unit is not suitable for cleaning with a high-pressure cleaner and/or cleaning products.

### Mechanical data

Micro switch to EN 61058-1.

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

Medium temperature = ambient temperature.

Max. inlet pressure  $p_{max}$  = withstand pressure or differential pressure:

DL..E = 5000 Pa (20 "WC),

DL..EH = 1500 Pa (6 "WC),

DL..ET = 5000 Pa (20 "WC).

Switching differential, see page 4 (5.1 Adjusting range).

Diaphragm pressure switch, tempered LSR diaphragm system.

Housing: glass fibre reinforced PBT plastic with low gas release.

Weight: 83 g (2.9 oz).

Recommended tightening torque:

Component	Tightening torque [Ncm]
Cover screws	65
Strain relief facility	65

### Electrical data

Switching capacity

	U	I (cos φ = 1)	I (cos φ = 0.6)
DL	24– 250 V AC	0.05–5 A	0.05–1 A
DL..G	5–250 V AC	0.01–5 A	0.01–1 A
DL..G	5–48 V DC	0.01–1 A	0.01–1 A
DL..T	30– 240 V AC	5 A	0.5 A
DL..TG	< 30 V AC/ DC	0.1 A	0.05 A

Contact gap < 3 mm (μ).

If the pressure switch 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.

## 9 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 DL 2-35E: 10 years.

You can find further explanations in the applicable rules and regulations and on the afecor website ([www.afecor.org](http://www.afecor.org)).

This procedure applies to heating systems. For thermoprocessing equipment, observe local regulations.

## 10 CERTIFICATION

### Declaration of conformity



We, the manufacturer, hereby declare that the products DL 2-35E with product ID No. CE-0085AP0466 comply with the requirements of the listed Directives and Standards.

Directives:

- 2014/35/EU – LVD
- 2014/30/EU – EMC
- 2011/65/EU – RoHS II
- 2015/863/EU – RoHS III

Regulation:

- (EU) 2016/426 – GAR

Standards:

- 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](http://www.docuthek.com)

### 10.1 UKCA certified



Gas Appliances (Product Safety and Metrology etc. (Amendment etc.) (EU Exit) Regulations 2019)  
BS EN 1854:2010

### 10.2 FM and AGA approval, UL listing, Eurasian Customs Union, RoHS compliant



### 10.3 REACH Regulation

The device contains substances of very high concern which are listed in the Candidate List of the European REACH Regulation No. 1907/2006. See Reach list HTS at [www.docuthek.com](http://www.docuthek.com).

### 10.4 China RoHS

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](http://www.docuthek.com).

## 11 LOGISTICS

### Transport

Protect the unit from external forces (blows, shocks, vibration).

Transport temperature: see page 5 (8 Technical data).

Transport is subject to the ambient conditions described.

Report any transport damage on the unit or packaging without delay.

Check that the delivery is complete.

### Storage

Storage temperature: see page 5 (8 Technical data).

Storage is subject to the ambient conditions described.

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.

## 12 DISPOSAL

Devices with electronic components:

### WEEE Directive 2012/19/EU – Waste Electrical and Electronic Equipment Directive



At the end of the product life (number of operating cycles reached), dispose of the packaging and product in a corresponding recycling centre. Do not dispose of the unit with the usual domestic refuse.

Do not burn the product.

On request, old units may be returned carriage paid to the manufacturer in accordance with the relevant waste legislation requirements.

## FOR MORE INFORMATION

The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschroder and Maxon. To learn more about our products, visit [ThermalSolutions.honeywell.com](http://ThermalSolutions.honeywell.com) or contact your Honeywell Sales Engineer.

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