

# Explosion-protected pressure switches

according to ATEX directive 2014/34/EU and IECEx scheme



- ATEX certification for the Ex-protected zones:
  - 1 + 2 (Gases and vapours)
  - 21 + 22 (Dust)
  - M2 Mining (Methane / coal dust)
- Types 0342/0343 are certified according to IECEx scheme
- Switching point can be easily adjusted by the user while system in operation
- Compact design
- Excellent price-performance ratio

# Explosion-protected pressure switches

## Technical details

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### Technical explanations

Explosion-protected pressure switches are classified according to the respective combustible material-type. This division is:

<b>Gases and vapours</b> 0165, 0342 / 0343	<b>Dusts</b> 0340 / 0341, 0342 / 0343	<b>Methane / coal dust</b> 0342 / 0343
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### ATEX/IECEx marking for pressure switches

Our pressure switches are designed for gases and vapours (G), dust (D) and methane / coal dust (M) in mining:

Series	Flammable materials	Ex zones	Ex marking acc. to 2014/34/EU
0165	Gases and vapours	1 + 2	Ex II 2G Ex d II C T6/T5 X
0340 / 0341	Dusts	22	Ex II 3D Ex tc IIIC T90°C Dc
0342 / 0343	Gases and vapours	1 + 2	Ex II 2G Ex db IIC T6 / T5 Gb
	Dusts	21 + 22	Ex II 2D Ex tb IIIC T80°C/ T100°C Db
	Methane / coal dust	M2 (Mining)	Ex I M2 Ex db I Mb

The following table shows an overview of the explosion protection zones, device groups and categories. The applications covered by our pressure switches (according to Ex zones) are highlighted in colour.

### Conditions in potentially explosive atmosphere

Com-bustible materials	Temporary behaviour of com-bustible materials in potentially explosive area	Categori-sation of potentially explosive areas	Marking required on equipment to be used	
			Equipment group	Equipment category
Gases Vapours	are present continually, frequently or for long periods	Zone 0	II	1G
	occur occasionally	Zone 1	II	2G
	are unlikely to occur, and if so, are then only seldom or for short periods	Zone 2	II	2G
Dusts	are present continually, frequently or for long periods	Zone 20	III	1D
	occur occasionally	Zone 21	III	2D
	occur if accumulated dust is whirled up, and then only seldom or for short periods	Zone 22	III	3D or 2D
Methane / Coal dust	operation where there is a risk of explosions	-	I	M1
	disconnection where there is a risk of explosion	-	I	M2 or M1



# Explosion-protected pressure switches

## Technical details

Type	0165	0340 / 0341	0342 / 0343		
Ex zones:	1 + 2	22	1 + 2	21 + 22	Mining
Flammable materials:	Gases and vapours	Dusts	Gases and vapours	Dusts	Methan / coal dust
Temperature resistance:	NBR		-20 °C ... +80 °C		
	EPDM		-20 °C ... +80 °C		
	FKM (Diaphragm pressure switch)		-5 °C ... +80 °C		
	FKM (Piston pressure switch)		-15 °C ... +80 °C		
	FFKM (0340 + 0342 only)		-20°C ... +80 °C		
	HNBR		-20°C ... +80 °C		
Switching frequency:	200 / min				
Mechanical life expectancy:	1.000.000 cycles				
Pressure rise rate:	≤ 1.000 bar/s				
Hysteresis:	10 ... 30 % (depending on type, non-adjustable)				
Vibration resistance:	10 g; 5 ... 200 Hz sine wave; DIN EN 60068-2-6				
Shock resistance:	294 m/s <sup>2</sup> ; 14 ms half sine wave; DIN EN 60068-2-27				
Cable length:	Standard length approx. 2m with wire end sleeve, also available in lengths of approx. 5m as well as customer-specific lengths				
Protection class:	IP65				
Cable cross-section:	3 x 0,75 mm <sup>2</sup>	3 x 0,5 mm <sup>2</sup>			
Housing material:	Aluminium	Zinc-plated steel (CrVI-free), anodised aluminium			
Weight:	approx. 380 g	approx. 230 g			

### Elektrische Werte

Rated working voltage $U_e$ (usage category):	Rated working current $I_e$ :	
250 VAC 50 / 60 Hz, AC 12	2 A	5 A
250 VAC 50 / 60 Hz, AC 14	1 A	1 A
24 VDC, DC 12 / DC 13	2 / 1 A	3,5 / 3,5 A
50 VDC, DC 12 / DC 13	1 / 0,5 A	2 / 1 A
75 VDC, DC 12 / DC 13	0,5 / 0,25 A	1 / 0,5 A
125 VDC, DC 12 / DC 13	0,2 / 0,1 A	0,3 / 0,2 A
250 VDC, DC 12 / DC 13	0,15 / 0,1 A	0,25 / 0,2 A
Rated insulation voltage $U_i$ :	300 V	
Rated impulse withstand voltage $U_{imp}$ :	4 kV	
Conventional thermal current $I_{the}$ :	5 A	
Switching overvoltage:	< 2,5 kV	
Rated frequency:	DC und 50 / 60 Hz	
Nominal current of short-circuit mechanism:	bis 3,5 A	
Conditional short-circuit current:	< 350 A	

# 0165

Diaphragm / piston pressure switches up to 250 V

ATEX 0102 CE II 2G Ex d II C T6 / T5 X (gas-protected zones 1 and 2)

- Aluminium housing
- Changeover with silver contacts
- Operating voltage up to 250 V
- Overpressure safety up to 200 / 600 bar<sup>1)</sup>

p <sub>max</sub> in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
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## 0165 Diaphragm pressure switches

200 <sup>1)</sup>	1 – 6	± 0.5	G 1/4 female	0165 - 448 14 - X - 001
	5 – 50	± 3.0		0165 - 449 14 - X - 001

## 0165 Piston pressure switches

600 <sup>1)</sup>	20 – 100	± 3.0 – 5.0	G 1/4 female	0165 - 450 14 - X - 001
	25 – 250	± 5.0 – 7.0		0165 - 452 14 - X - 001
	100 – 400	± 5.0 – 9.0		0165 - 451 14 - X - 001

## Seal material – Application areas

NBR	Hydraulic/machine oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3

Refer to page 82 for the temperature range and application thresholds of sealing materials.

Article number: **0165 - XXX 14 - X - 001**

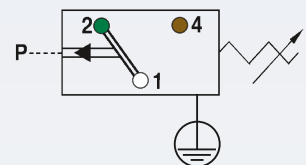
**Piston pressure switches only have limited suitability for use with gases (refer to Page 17 for explanations).**

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Contact assignment:

- 1 = white
- 2 = green
- 4 = brown



<sup>1)</sup> Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.



## 0340 / 0341

Diaphragm / piston pressure switches up to 250 V

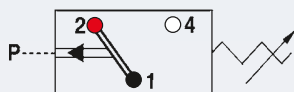
**ATEX CE II 3D Ex tc IIIC T90°C Dc (dust-protected zone 22)**

- Zinc-plated steel housing (CrVI-free), with anodised aluminium protective cap
- Changeover with silver contacts
- Operation voltage up to 250 V, protection class 2, protective insulation
- Overpressure safety up to 300 / 600 bar<sup>1)</sup>



### Contact assignment

- 1 = black
- 2 = red
- 4 = white



$p_{max}$ in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
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### 0340 Diaphragm pressure switches

$p_{max}$ in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
300 <sup>1)</sup>	0.3 – 1.5	± 0.2	G 1/4	0340 - 457 03 - X - 003
	1 – 10	± 0.5 – 1.0		0340 - 458 03 - X - 006
	10 – 20	± 1.0		0340 - 459 03 - X - 009
	20 – 50	± 2.0		0340 - 461 03 - X - 012

### 0341 Piston pressure switches

$p_{max}$ in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
600 <sup>1)</sup>	50 – 150	± 5.0	G 1/4	0341 - 460 03 - X - 003

### Seal material – Application areas

NBR	Hydraulic/machine oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
FFKM <sup>2)</sup>	Hot water, chemical acids, diluted alkalis, ketones, ester's, alcohols	6
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Refer to page 82 for the temperature range and application thresholds of sealing materials.



Article number:

034X - XXX 03 - X - XXX

**Piston pressure switches only have limited suitability for use with gases (refer to Page 17 for explanations).**

<sup>1)</sup> Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

<sup>2)</sup> Only suitable for diaphragm pressure switches (Type 0340).

# 0342 / 0343

Diaphragm / piston pressure switches up to 250 V acc. to IECEx scheme

ATEX C<sup>e</sup> II 2G Ex db IIC T6 / T5 Gb (gas-protected zones 1 + 2)

ATEX C<sup>e</sup> II 2D Ex tb IIIC T80°C / T100°C Db (dust-protected zones 21 + 22)

ATEX C<sup>e</sup> I M2 Ex db I Mb (mining)

- Operation voltage up to 250 V, protection class 2, protective insulation
- Overpressure safety up to 300 / 600 bar<sup>1)</sup>
- Certification according to IECEx scheme

p <sub>max</sub> in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
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## 0342 Diaphragm pressure switch

300 <sup>1)</sup>	0.3 – 1.5	± 0.2	G 1/4 DIN 3852-2-A	0342 - 457 60 - X - 020
	1 – 10	± 0.5 – 1.0		0342 - 458 60 - X - 020
	10 – 20	± 1.0		0342 - 459 60 - X - 020
	20 – 50	± 2.0		0342 - 461 60 - X - 020

300 <sup>1)</sup>	0.3 – 1.5	± 0.2	NPT 1/4 <sup>2)</sup>	0342 - 457 09 - X - 020
	1 – 10	± 0.5 – 1.0		0342 - 458 09 - X - 020
	10 – 20	± 1.0		0342 - 459 09 - X - 020
	20 – 50	± 2.0		0342 - 461 09 - X - 020

## 0343 Piston pressure switch

600 <sup>1)</sup>	50 – 150	± 5.0	G 1/4 (DIN 3852-2-A)	0343 - 460 60 - X - 020
600 <sup>1)</sup>	50 – 150	± 5.0	NPT 1/4	0343 - 460 09 - X - 020

## Seal material – Application areas

NBR	Hydraulic/machine oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
FFKM <sup>3)</sup>	Hot water, chemical acids, diluted alkalis, ketones, ester's, alcohols	6
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Refer to page 82 for the temperature range and application thresholds of sealing materials.

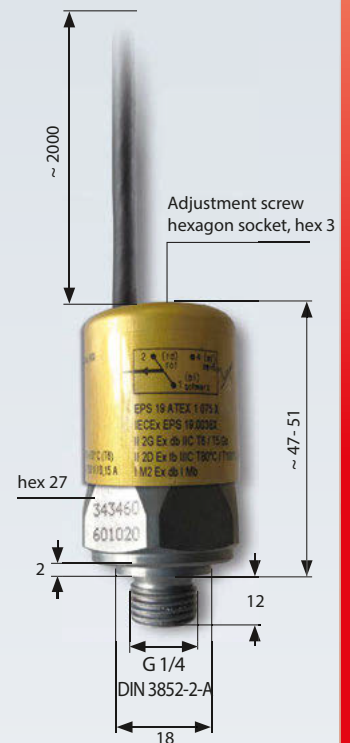
Article number: 034X – XXX XX – X – 020<sup>4)</sup>

**Piston pressure switches only have limited suitability for use with gases (refer to Page 17 for explanations).**

<sup>1)</sup> Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.  
<sup>2)</sup> For small quantities only available with thread adapter (G1/4 to NPT1/4). Please consult SUCO for further information.  
<sup>3)</sup> Only suitable for diaphragm pressure switches (Type 0342).  
<sup>4)</sup> End number -020 corresponds to the standard cable length of 2 m. For a cable length of 5 m, please specify end number -050.

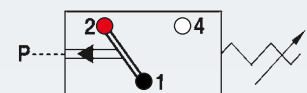
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## Contact assignment

- 1 = black
- 2 = red
- 4 = white



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