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

Technical explanations

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

Gases and vapours	Dusts	Methane / coal dust
0165, 0342 / 0343	0340 / 0341, 0342 / 0343	0342 / 0343

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

Combustible materials	Temporary behaviour of combustible materials in potentially explosive area	Categorisation 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/s²; 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 lenghts				
Protection class:	IP65				
Cable cross-section:	3 x 0,75 mm²	3 x 0,5 mm²			
Housing material:	Aluminium	Zinc-plated steel (CrVI-free), anodised aluminium			
Weight:	approx. 380 g	approx. 230 g			

Elektrische Werte

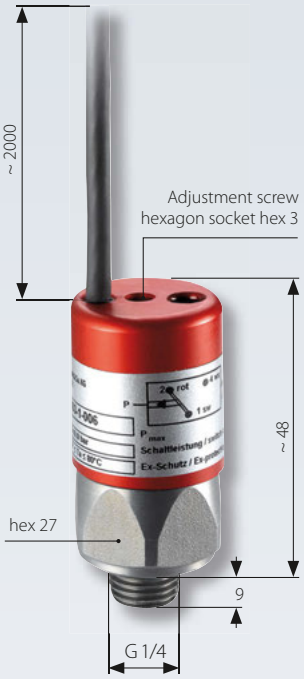
Rated working voltage U_e (usage category):	Rated working current I_e:	
250 VAC 50 / 60 Hz, AC 12	2 A	5 A
250 VAC 50 / 60 Hz, AC 14	1 A	1 A
24 VDC, DC 12 / DC 13	2 / 1 A	3,5 / 3,5 A
50 VDC, DC 12 / DC 13	1 / 0,5 A	2 / 1 A
75 VDC, DC 12 / DC 13	0,5 / 0,25 A	1 / 0,5 A
125 VDC, DC 12 / DC 13	0,2 / 0,1 A	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	

0340 / 0341

Diaphragm / piston pressure switches up to 250 V

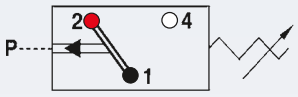
ATEX CE Ex II 3D Ex tc IIIC T90°C Dc (dust-protected zone 22)

- 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[1)]



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
0340 Diaphragm pressure switches				
300[1)]	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				
600[1)]	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[2)]	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).

[1)] Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.
[2)] Only suitable for diaphragm pressure switches (Type 0340).