

Description

The pressure sensors contain pressure sensor elements of the AE series, produced in our own clean room.

The DIL package, developed by our own engineers, is accentuated through its excellent media compatibility, its strong construction and a good mechanical decoupling.

The versions with a closed and open piezo-resistive bridge and with or without a temperature sensor provide a high flexibility for applications.

The (optional) temperature sensor may be used for a compensation of the temperature coefficient of the sensitivity.

The user can choose between a PTC and an integrated diode.

Features

RoHS compliant

Piezo-resistive bridge

Relative pressure

Rated pressure from 16mbar to 25bar

Measured media:

Air, process gases
(moisture 0 - 100%r.h.),
water, oil, petroleum...

Not suitable for substances which react to glass, silicon and stainless steel

Robust metal-plastic-casing

Pressure connection via various threads
(M5, M6) or 4.8mm tube fitting

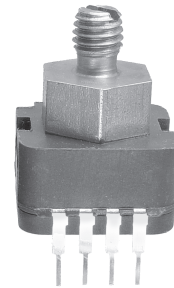
Suitable for mounting in transmitters

Easy PCB mounting

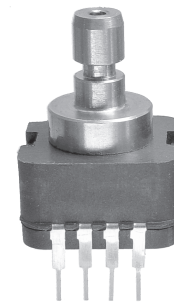
Low current consumption

Low noise

PTC or diode as temperature sensor



Types B, C
thread connection



Type D
tube fitting

Applications

Hydraulics and pneumatics

Compressors, pumps

Medical technology

Automotive technology

Automatic control

Liquid level indication

Household applications

Environmental protection

Water management

AK2 pressure sensors 2nd generation

Metal-plastic-casing



Technical data

Maximum ratings	Symbol	Unit	Min.	Max.
Storage temperature	T_{st}	°C	-40	+125
Operating temperature	T_a	°C	-30	+85
Soldering temperature (10s)		°C	-	+260
Supply voltage	V_{DD}	V	-	10
DC break down voltage (pin to enclosure)	V_{is}	V	500	-

Data @ $T_a = 25^\circ\text{C}$, $V_{DD} = 5\text{V}$	Symbol	Unit	Min.	Typ.	Max.
Bridge resistance C41	R_S	$k\Omega$	4.0	5.0	6.0
Bridge resistance C27, C31	R_S	$k\Omega$	2.6	3.3	4.0
Offset voltage	V_0	mV	-25	-	+25
PTC temperature sensor resistance	R_T	$k\Omega$	0.85	1.0	1.15
Diode flow voltage at $I_F = 50\mu\text{A}$	V_F	mV	-	600	-

Data in temperature range @ $V_{DD} = 5\text{V}$	Symbol	Unit	Min.	Typ.	Max.
Temperature coefficients of the bridge resistance ¹⁾	α_{RS} β_{RS}	$10^{-3} / \text{K}$ $10^{-6} / \text{K}^2$	-	2.5 6	-
Temperature coefficients of the sensitivity ¹⁾	α_S β_S	$10^{-3} / \text{K}$ $10^{-6} / \text{K}^2$	-2.6 4	-2.35 6	-2.1 8
Temperature coefficient of the offset voltage ²⁾	TCV_0	$\mu\text{V} / \text{VK}$	-	± 4	-
Temperature coefficients of the PTC temperature sensor ¹⁾	α_{RT} β_{RT}	$10^{-3} / \text{K}$ $10^{-6} / \text{K}^2$	-	7.9 19	-
Temperature coefficient of the Diode flow voltage ³⁾	TCV_F	mV / K	-	-2.2	-

¹⁾ In the temperature range -30..+80°C the formula $F(\vartheta) = F(25^\circ\text{C}) \cdot [1 + \alpha_F(\vartheta - 25^\circ\text{C}) + \beta_F(\vartheta - 25^\circ\text{C})^2]$ is considered

²⁾ In the temperature range -30..+80°C the formula $V_0(\vartheta) = V_0(25^\circ\text{C}) + V_{DD} \cdot TCV_0 \cdot (\vartheta - 25^\circ\text{C})$ is considered

³⁾ In the temperature range -30..+80°C the formula $V_F(\vartheta) = V_F(25^\circ\text{C}) + TCV_F \cdot (\vartheta - 25^\circ\text{C})$ is considered

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Data dependent on rated pressure

$T_a = 25^\circ\text{C}$, $V_{DD} = 5\text{V}$

Chip	p_r [bar]	$V_{sp}^{1)}$ [mV] Typ.	$S^2)$ [mV/bar]			$L^3)$ [%FS]		$p_{ov}^{4)}$ [bar] Min.
			Min.	Typ.	Max.	Typ.	Max.	
C41	0.016	25	1000	1500	2000	± 1	± 1.75	0.16
	0.025	25	640	1000	1280			0.25
	0.040	35	600	850	1125	± 0.75	± 1.5	0.25
	0.060	40	450	700	833			0.35
C27	0.100	50	350	500	700	± 0.5	± 1	0.5
	0.250	100	300	400	480			0.6
	0.400	120	225	300	375			1.0
	0.600	120	150	200	250	± 0.25	± 0.5	1.6
C31 ⁵⁾	1.000	120		120		± 0.25	- ⁵⁾	3
	4.000	120		30				6
	10.00	120		12				15
	25.00	120		5				37.5

Available rated pressures [bar] (others upon request)	0.016	0.025	0.040	0.060	0.100	0.160	0.250	0.400	0.600	1.000	1.600	2.500	4.000	6.000	10.00	16.00	25.00
AKR - type D	✓	✓	✓	✓	✓		✓	✓	✓	✓							
AKR - type B,C	✓	✓	✓	✓	✓		✓	✓	✓	✓			✓		✓		✓

¹⁾ Output span (Full Scale) $FS = V_{sp} = V_r - V_0$
 V_r = Output voltage at rated pressure p_r ; V_0 = Output voltage at $p = 0$

²⁾ Sensitivity $S = V_{sp} / p_r$

³⁾ Non-linearity (including hysteresis) determined with the end point method

⁴⁾ Allowable overpressure p_{ov}

⁵⁾ Projected, availability upon request

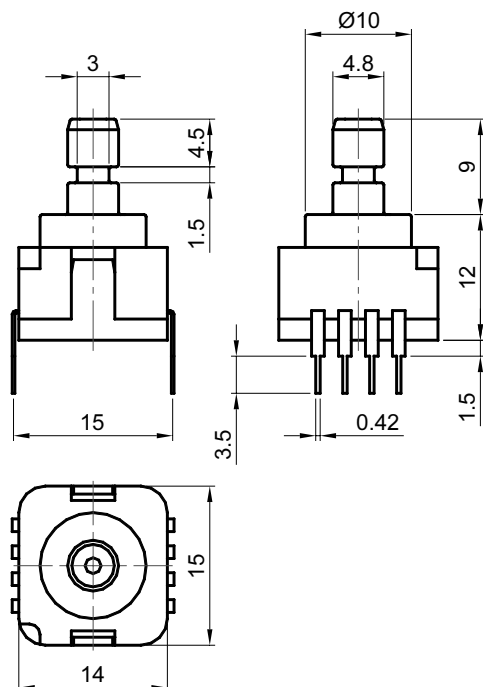
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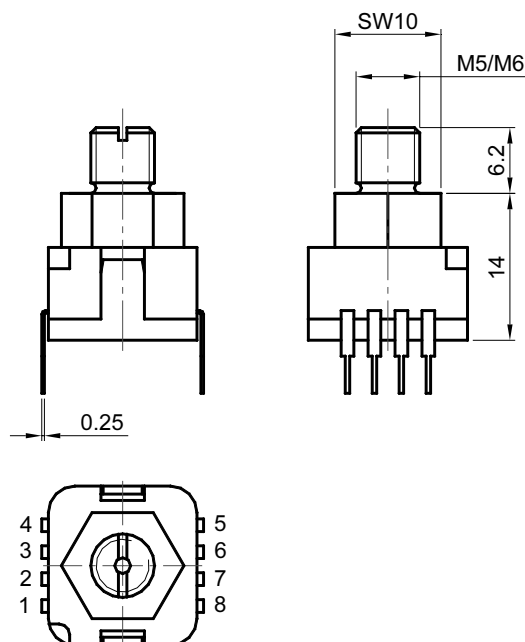


Dimensioned drawings

Type D (tube fitting)

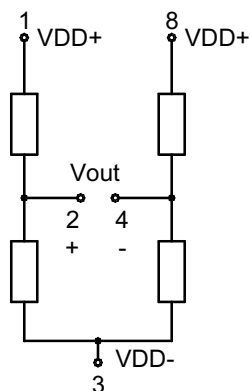


Types B, C (thread fitting)

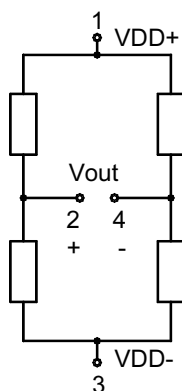


Circuit and terminal assignment

The polarity of V_{out} applies to positive pressure. Negative pressure (vacuum) results in a reversed polarity of V_{out} .



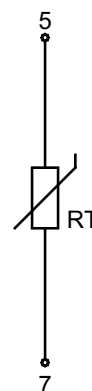
Open
bridge



Closed
bridge



Temperature sensor
(Diode or PTC)



Application notes

AN102; AN103

AK2

Data-sheet
4/5

46

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AKTIV SENSOR GmbH

Ruhlsdorfer Str. 95, Geb.4
D-14532 Stahnsdorf

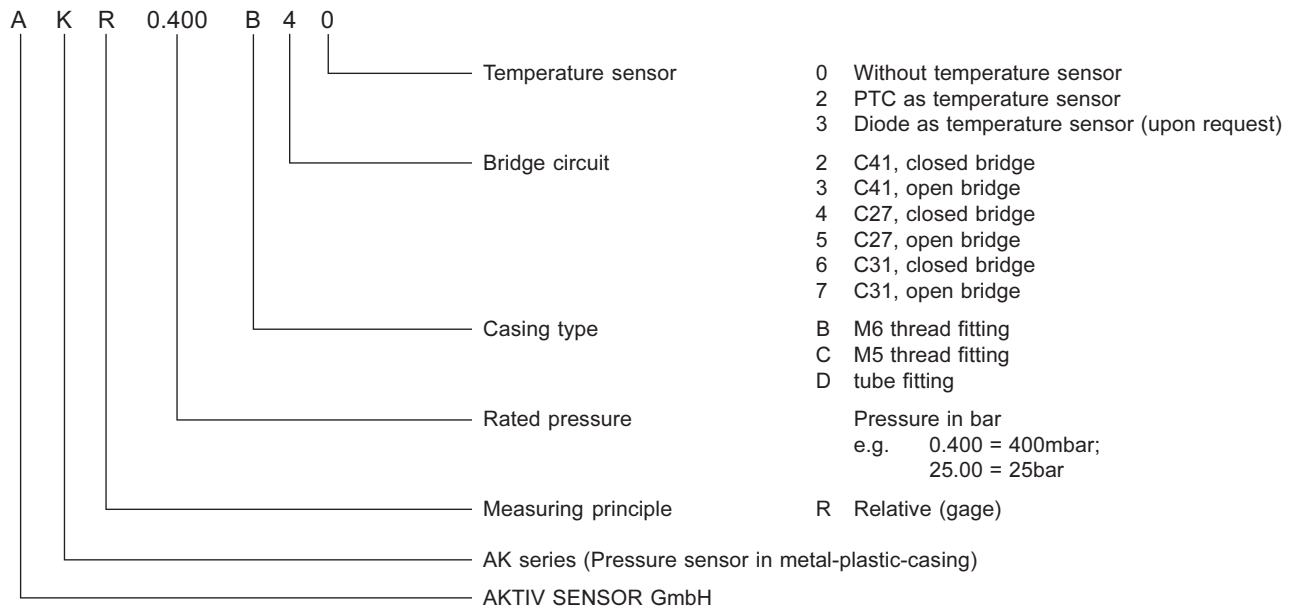
Phone: +49 (0) 3329 / 6068 -16/-17/-30
Fax: +49 (0) 3329 / 6068 -15
e-mail: info@aktiv-sensor.de
Internet: <http://www.aktiv-sensor.de>

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Component and order numbers



Matching accessories are listed in the accessories datasheet

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