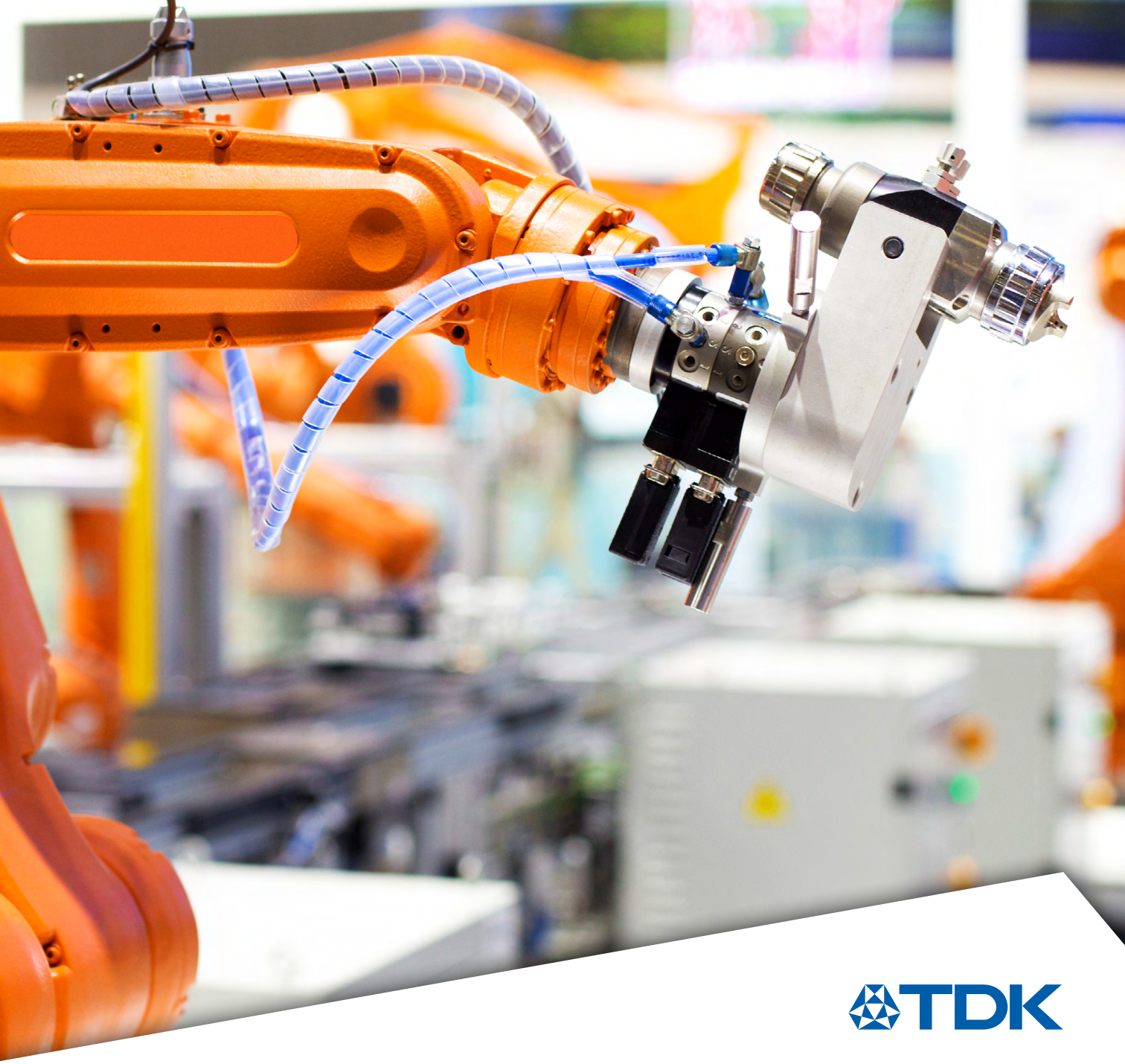
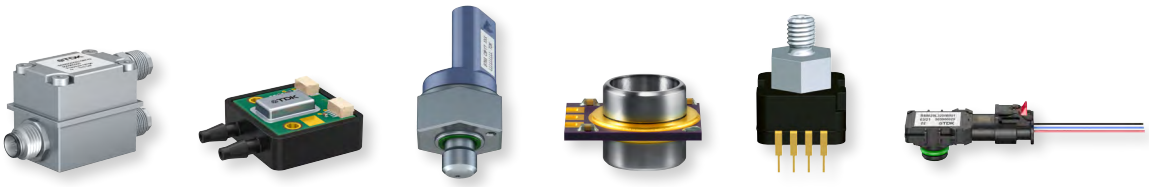


Product Profile 2022

Pressure Sensors

Industrial and Medical Applications



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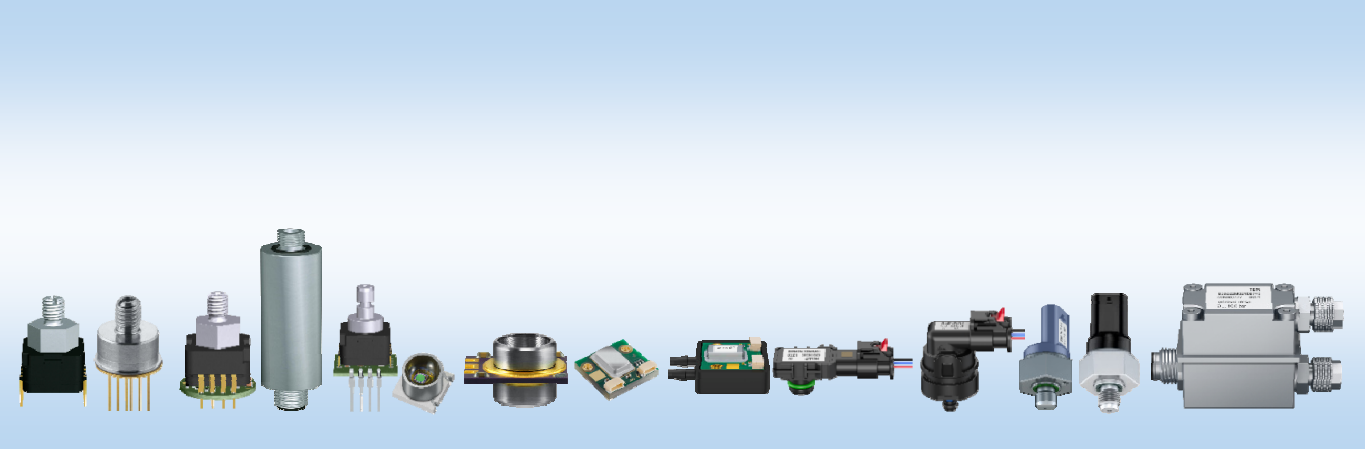
Pressure Sensors for Industrial and Medical Applications



The high precision of piezoresistive pressure sensors and their possible customization to specific requirements allow their versatile use in a wide range of applications.

Pressure sensors supply measured data for industrial equipment and systems in order to control and diagnose hydraulically or pneumatically operated machines, for instance. This makes them key components in measurement and control technology. Pressure sensors are also used in medical applications such as respiratory, anesthesia equipment, blood pressure monitoring and cleaning technology.

TDK offers various designs of piezoresistive pressure measurement devices from bare pressure sensor dies via packaged pressure transducers up to customer-specific pressure sensor systems. Every design is based on MEMS sensor dies developed and manufactured in our cleanrooms. Bonded and integrated into the standard package, the pressure transducer is processed directly on the circuit board. The pressure transmitters are extended by a signal evaluation module and supplied with or without housing in ready to mount form.

The portfolio of pressure sensors has been developed with a strong focus on increased sensitivity and high performance with long-term stability. In addition, particular attention is paid to specific features for media resistance and ease of processing.

General Technical Information

Typical applications

Industrial	Medical
■ Hydraulic and pneumatic systems ■ Measurement and control technology ■ Environmental and climate protection ■ Gas analyzers and smart meters ■ Pumps and compressors ■ Industry 4.0 ■ Heating, ventilation and air conditioning systems in buildings	■ Respiration technology ■ Anesthesia equipment ■ Blood pressure monitoring ■ Cleaning equipment ■ Pressure masks to treat sleep apnea

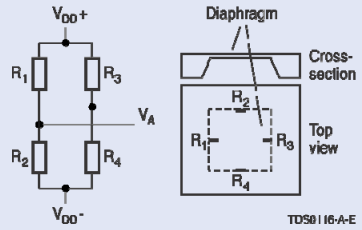
Pressure units

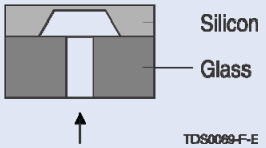
Conversion table for pressure units

bar	psi	kPa	cm H_2O	inch H_2O	mm Hg	lbf/ft²
0.016	0.232	1.6	16.32	6.43	12.0	33.416
0.025	0.363	2.5	25.49	10.04	18.8	52.213
0.040	0.58	4.0	40.79	16.06	30.0	83.54
0.060	0.87	6.0	61.18	24.09	45.0	125.31
0.100	1.45	10.0	101.97	40.15	75.0	208.85
0.160	2.32	16.0	163.2	64.25	120.0	334.16
0.250	3.63	25.0	254.9	100.35	188.0	522.125
0.400	5.8	40.0	407.9	160.59	300.0	835.4
0.600	8.7	60.0	611.8	240.87	450.0	1253.1
1.000	14.5	100.0	1019.7	401.46	750.0	2088.5
1.600	23.2	160.0	1632.0	642.52	1200.0	3341.6
2.500	36.3	250.0	2549.0	1003.54	1875.0	5221.25
4.000	58.0	400.0	4079.0	1605.91	3000.0	8354.0
6.000	87.0	600.0	6118.0	2408.66	4500.0	12531.0
10.00	145.0	1000.0	10197.0	4014.57	7501.0	20885.0
16.00	232.0	1600.0	16316.0	6423.62	12001.0	33416.0
25.00	363.0	2500.0	25494.0	10037.01	18752.0	52212.5
40.00	580.0	4000.0	40790.0	16059.06	30002.0	83540.0
60.00	870.0	6000.0	61184.0	24088.19	45003.0	125310.0
100.00	1450.0	10000.0	101974.0	40147.24	75006.0	208850.0

General Technical Information

Measurement principle





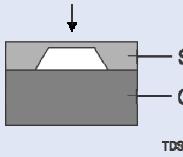
Measurement of pressure with silicon sensor dies is based on the piezo-resistive effect. This is utilized in a silicon diaphragm in which mechanical stress leads to a change of resistivity. The mechanical stress results from a pressure difference across the diaphragm.

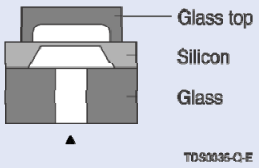
A Wheatstone bridge network of implanted resistors in the diaphragm is used to transform the change of resistivity into an electrical signal that is proportional to the applied pressure difference.

Depending on the application, the sensor can be used as a bare die or be bonded to glass for mechanical restraint or to provide a reference vacuum.

Absolute pressure

Absolute pressure sensor dies need a vacuum as a reference point for the pressure to be measured. This reference vacuum is created by bonding the sensor to a solid glass base.





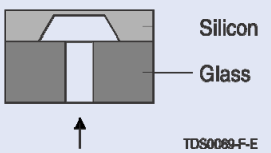
Front side processing
The reference vacuum is created by bonding the glass under vacuum to the silicon. The medium to be measured comes into contact with the active electronic components on the front side of the chip (top side of the chip). Only dry and non-aggressive media may be measured.

Back side processing
To measure the pressure of wet and/ or harsh media, direct contact with the front side needs to be avoided. This is done by creating a backside entry for the media and a reference vacuum on the front side.

Differential pressure

A pressure difference caused by a higher front side pressure leads to a positive change of the output signal. A higher backside pressure leads to a negative change of the output signal. A differential pressure sensor can be used for flow measurement by measuring the pressure drop across a restrictor such as a filter or an orifice.

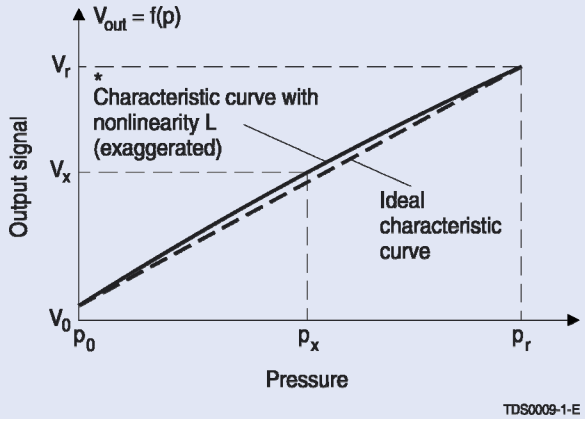
Gauge pressure



A gauge pressure sensor is a special case of a differential pressure sensor where the measurement is related to ambient air pressure, which is exposed from either the front or the backside.

General Technical Information

Description of terms

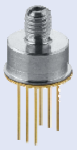
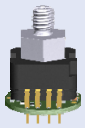
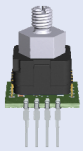
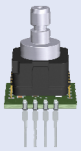
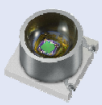
Characteristic curve	The key parameters of the characteristic curve are described below: 
Offset voltage	The output voltage V_{out} at zero pressure, known as the offset voltage, typically varies between ±25 mV[1] due to the spread of the technological parameters.
Sensitivity	The sensitivity is the quotient of the changes of the output voltage and the applied pressure. Thinner diaphragms and larger surfaces increase the sensitivity and decrease the loadbearing capacity of the diaphragm. Every design is therefore a compromise between high sensitivity and a sufficient pressure overload factor. Depending on the pressure range, the sensitivity extends between 2 and 500 mV/bar[1].
Nonlinearity	The nonlinearity describes the deflection of the characteristic curve or the deviation from an ideal straight line. Depending on the pressure range, the nonlinearity typically varies from ±0.1 to ±1.0% FS[2].
Hysteresis	For an output signal indicating the same pressure, the hysteresis represents the greatest difference between measurements made in the direction of increasing and (subsequently) decreasing pressure. This error cannot be determined or compensated. However, this effect is very small and can be neglected in most applications.
Temperature effects	The offset, sensitivity and bridge resistance are functions of the temperature.
Offset V_0	The temperature coefficient of the offset voltage typically varies between ±10 µV/V/K depending on the technological parameters.
Sensitivity S	The temperature coefficient of the sensitivity is much more significant. Depending on the technological parameters, a typical value of α_S ranges between –2.5 and $-1.9 \cdot 10^{-3}$/K. The sensitivity thus decreases with temperature rise. A typical value of β_S is $5 \cdot 10^{-6}/K^2$.
Bridge resistance R_b	The bridge resistance is directly proportional to the temperature (at 25 °C, a typical value ranges between 3 and 5 kΩ). Depending on the technological parameters, a typical value of α_{Rb} ranges between 2.0 and $2.5 \cdot 10^{-3}$/K. A typical value of β_{Rb} is $6 \cdot 10^{-6}/K^2$.

[1] At V_{CC} = 5 V voltage source
[2] FS = $V_r - V_o$ (full scale)

Note: For further details, please refer to pages 22 and 23.

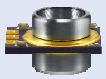
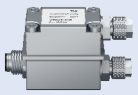
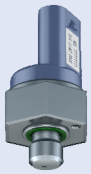
Overview

Pressure sensor transducers and transmitters

Type	Description	Characteristics	Page
Pressure sensor transducers			
AK2 	• AK2 gauge pressure transducers are based on piezoresistive silicon pressure sensor dies from our own cleanroom production facility • The robust stainless steel/plastic casing features excellent mechanical decoupling **Rated pressure range**: 0.025 … 25.00 bar; **Pressure measurement**: Gauge	• Piezoresistive MEMS technology • Wheatstone bridge with mV output ratiometric to supply voltage • RoHS-compatible, halogen-free • Dual-in-line package for PCB mounting **Options** • Pressure port 4.8 mm tube fitting • Pressure port M5 thread	9
AT2 	• AT2 absolute pressure transducers are based on piezoresistive silicon pressure sensor dies from our own cleanroom production facility • The stainless steel casing features excellent mechanical decoupling **Rated pressure range**: 1.60 … 25.00 bar; **Pressure measurement**: Absolute	• Piezoresistive MEMS technology • Wheatstone bridge with mV output ratiometric to supply voltage • RoHS-compatible, halogen-free • TO39 package for PCB mounting	10
Pressure sensor transmitters			
CAU-T  	• CAU pressure transmitters with and without stainless steel casing represent temperature compensated and calibrated precision pressure sensors • The electronics of the CAU series compensates non-linearity and temperature errors of the piezo-resistive measurement circuit • The T-series electronic compensates non-linearity and temperature errors and supplies a highly accurate calibrated output signal with a high immunity against electromagnetic influences (EMI) **Rated pressure range**: 1.00 … 25.00 bar; 0.10 … 25.00 bar; 0.10 … 1.00 bar **Pressure measurement**: Absolute; Gauge; Gauge, symmetrical	• Piezoresistive MEMS technology • RoHS-compatible, halogen-free **Options** • Without casing with pressure port M5 thread • Compact stainless steel case (protection IP65) with G1/8” thread includes a shielded 4-pole cable with female M12 locking plug • Output signal available as voltage (0.5 …4.5 V) or as 2-wire current (4 …20 mA)	11
AC-T  	• The AC-T pressure transmitters offer pressure ranges up to 25 bar absolute and gauge, excellent accuracy and connecting options • They are completely calibrated and temperature compensated, hence suitable for integration in control blocks and circuit boards • The T-series electronic compensates non-linearity and temperature errors and supplies a highly accurate calibrated output signal with a high immunity against electromagnetic influences (EMI) **Rated pressure range**: 0.10 … 25.00 bar; 0.10 … 1.00 bar **Pressure measurement**: Gauge; Gauge, symmetrical	• Piezoresistive MEMS technology • Voltage output 0.5 … 4.5 V • RoHS-compatible, halogen-free • Dual-in-line package for PCB mounting **Options** • Pressure port 4.8 mm tube fitting • Pressure port M5 thread	15
ASB 	• The ASB 1200 VR is a miniaturized SMD hybrid package with a stainless steel pressure port • The voltage output is calibrated and temperature compensated **Rated pressure range**: 0.20 … 1.20 bar; **Pressure measurement**: Absolute	• Piezoresistive MEMS technology • Voltage output ratiometric to supply voltage • RoHS-compatible, halogen-free • SMD ceramic package for PCB mounting	16

Overview

Pressure sensor transducers and transmitters

Type	Description	Characteristics	Page
Pressure sensor transmitters			
MiniCell™  	• MiniCell™ series are miniaturized media separated differential pressure transmitters with high media resistance on both pressure ports due to high alloyed steel diaphragms • Available with or without stainless steel housing, the sensor compensates non-linearity and temperature errors • The integrated signal conditioner provides a calibrated output signal with a high immunity against electromagnetic influences (EMI) and overvoltage and reverse voltage protection • The sensor achieves a very high accuracy over the entire temperature and pressure range • Can be also used as gauge pressure sensor **Rated pressure range**: 0 … 0.5 bar; 0 … 1.0 bar; 0 … 2.5 bar; 0 … 5.0 bar; 0 … 10.0 bar **Pressure measurement**: Differential or gauge	• Piezoresistive MEMS technology • Voltage output 0.5 … 4.5 V, ratiometric to supply voltage • RoHS-compatible, halogen-free **Options** • Robust stainless steel case (protection IP67) with G 1/8" pressure ports and M12 electrical plug and the kit includes pressure connectors for 6x4 mm tube	17
AVD  	• The AVD series are compact pressure transmitters with flat design and easy screw-on or PCB mounting • High accuracy at low pressure ranges • Large, compensated temperature range • Integrated temperature measurement **Rated pressure range**: 0 … 0.016 bar; 0 … 0.100 bar; 0 … 7.00 bar **Pressure measurement**: Differential	• Digital output SPI or I^2C interface • Second electrical connection for daisy chain • RoHS-compatible, halogen-free **Options** • Flat design for direct PCB mounting • AVD series with hose connections for easy mounting of tubes • Other interfaces on request	18
AFA  	• AFA absolute pressure transmitters have high resistance against non-freezing media like fuel, diluted acids, contaminated air • The integrated signal conditioner compensates non-linearity and temperature errors and supplies a precise calibrated, amplified output signal with a high immunity against electromagnetic influences (EMI) • High measuring accuracy and short response time with overvoltage and reverse voltage protection **Rated pressure range**: 1.00 … 11.00 bar **Pressure measurement**: Absolute	• Piezoresistive MEMS technology • Voltage output 0.5 … 4.5 V, ratiometric to supply voltage • RoHS-compatible, halogen-free **Options** • Plastic or steel housing • Sensor kit includes wire adapter with 1 m cables with precut lead ends for versatile integration	19
ALA 	• ALA absolute pressure transmitters have high resistance against media like diluted acids, contaminated air, exhaust gases • The integrated signal conditioner compensates non-linearity and temperature errors and supplies a precise calibrated, amplified output signal with a high immunity against electromagnetic influences (EMI) • High measuring accuracy and short response time with overvoltage and reverse voltage protection **Rated pressure range**: 0.50 … 1.50 bar **Pressure measurement**: Absolute	• Piezoresistive MEMS technology • Voltage output 0.5 …4.5 V, ratiometric to supply voltage • RoHS-compatible, halogen-free **Options** • Sensor kit includes wire adapter with 1 m cables with precut lead ends for versatile integration	20

Overview

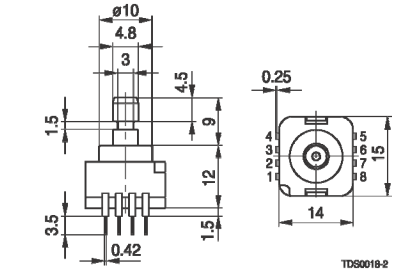
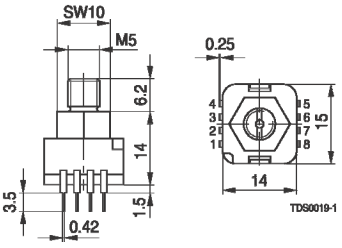
Pressure sensor transducers and transmitters

Type	Description	Characteristics	Page
Pressure sensor transmitters			
P/T-Sensor 	• P/T-Sensor is a combined high pressure and temperature sensor with high resistance against aggressive media and hydrogen due to stainless steel pressure port • Available with analog output voltage • The integrated signal conditioner provides a calibrated output signal with a high immunity against electromagnetic influences (EMI) and overvoltage and reverse voltage protection • The sensor achieves a very high accuracy over the entire temperature and pressure range • Measures medium temperature in the range -40 … 165 °C	• Thin-film technology • 0.5 … 4.5 V analog output voltage with 5 V supply voltage • RoHS-compatible, halogen-free • Weight 28 g **Options** • Robust stainless steel case (1.4301 and 1.4548.4) with M10x1 pressure port and automotive electric plug (TE C-114-18679-3 Code B) • Material with contact to the media: Stainless Steel AISI 630 (DIN 1.4542) • Digital output signal on request	21

Rated pressure range	Pressure measurement
0 … 170.0 bar	Absolute

Pressure Transducers

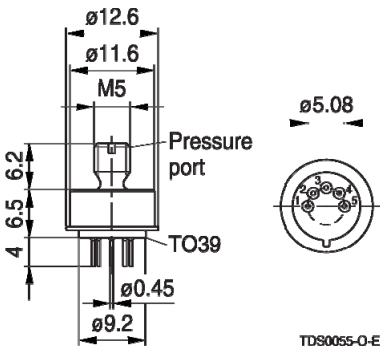
Technical data

Type		AK2, KD types					AK2, KC types			
Pressure measurement		Gauge								
Measured media		Non-aggressive fluids and gases								
Output signal		mV								
Terminal assignment		Supply voltage V_{CC+}: Pin 1, Output voltage V_{A+}: Pin 2, Supply voltage V_{CC-}: Pin 3, Output voltage V_{A-}: Pin 4								
Dimensional drawings in mm		KD type, tube fitting 					KC type, thread connection 			
Maximum ratings										
Storage temperature T_{st}	°C	-40 … +125					-40 … +125			
Operating temperature T_a	°C	-30 … +85					-30 … +85			
Supply voltage (max.) V_{CC}	V	10					10			
Temperature characteristics V_{DD} = 5 V										
Temperature coefficients α_{RS} of the bridge resistance (typ.) β_{RS}	10^{-3}/K 10^{-6}/K²	2.4 6					2.4 6			
Temperature coefficients α_S of the sensitivity (typ.) β_S	10^{-3}/K 10^{-6}/K²	-2.2 5					-2.2 5			
Characteristics T_a = 25 °C, V_{DD} = 5 V										
Bridge resistance (typ.) R_S	kΩ	5.0	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2
Offset voltage (min./max.) V_{AO}	mV	-25 … +25								
Nonlinearity (typ.) L	%FS	±1	±0.5	±0.5	±0.5	±0.25	±0.25	±0.25	±0.25	±0.25
Sensitivity (typ.) S	mV/bar	1000	500	400	300	120	48	20	12	4.8
Over pressure (min.) p_{ov}	bar	0.250	0.500	0.600	1.000	3.000	5.000	9.000	24.00	37.50
Rated pressure p_r	bar	0.025	0.100	0.250	0.400	1.000	2.500	6.000	10.00	25.00
Ordering code for KD types[1)]		B58611K1100A001	B58611K1100A003	B58611K1100A004	B58611K1100A005	B58611K1100A006	B58611K1100A007	B58611K1100A008	B58611K1100A009	
Ordering code for KC types[1)]		B58611K1500A007	B58611K1500A009	B58611K1500A010	B58611K1500A011	B58611K1500A012	B58611K1500A013	B58611K1500A014	B58611K1500A015	B58611K1500A016

[1)] Other pressure ranges on request.

Pressure Transducers

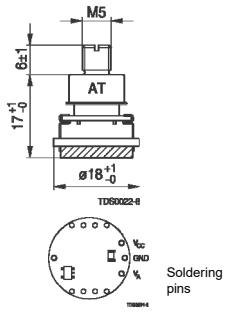
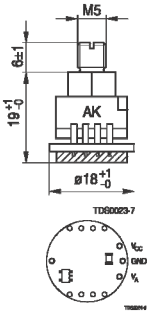
Technical data

Type	AT2			
Pressure measurement	Absolute			
Measured media	Non-aggressive gases			
Output signal	mV			
Terminal assignment	Supply voltage V_{CC+}: Pin 2, Output voltage V_{A+}: Pin 5, Supply voltage V_{CC-}: Pin 4, Output voltage V_{A-}: Pin 3			
Dimensional drawings in mm				
Maximum ratings				
Storage temperature T_{st}	ºC	-40 … +125		
Operating temperature T_a	ºC	-30 … +85		
Supply voltage (max.) V_{CC}	V	10		
DC breakdown voltage (min.) V_{is}	V	500		
Temperature characteristics V_{DD} = 5 V				
Temperature coefficients α_{RS} of the bridge resistance (typ.) β_{RS}	10^{-3}/K $10^{-6}/K^2$	2.3 5		
Temperature coefficients α_S of the sensitivity (typ.) β_S	10^{-3}/K $10^{-6}/K^2$	-2.2 5		
Characteristics T_a = 25 ºC, V_{DD} = 5 V				
Bridge resistance (typ.) R_S	kΩ	3.3		
Offset voltage (min./max.) V_{AO}	mV	-30 … +30		
Nonlinearity (typ.) L	%FS	±0.2		
Sensitivity (typ.) S	mV/bar	70	31	12	5
Over pressure (min.) p_{ov}	bar	4.000	6.000	15	37.50
Rated pressure p_r	bar	1.600	4.000	10.00	25.00
Ordering code[1)]		B58610T4600A001	B58610T4600A003	B58610T4600A005	B58610T4600A007

[1)] Other pressure ranges on request.

Pressure Transmitters

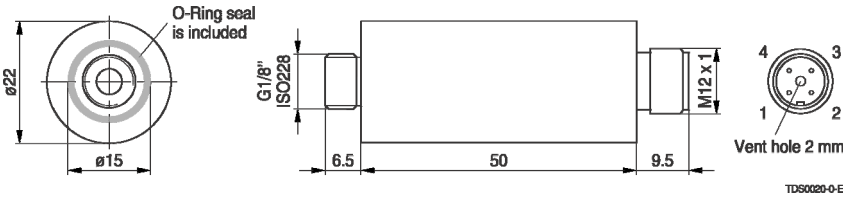
Technical data

Type			CAU-T without stainless steel housing, voltage output									
Pressure measurement			Absolute			Gauge					Gauge, symmetrical	
Measured media			Non-aggressive gases			Non-aggressive fluids and gases						
Output signal			0.5 V … 4.5 V, calibrated and temperature compensated									
Terminal assignment			Supply voltage: V_{CC}, Ground: GND, Output signal (reference to GND): V_A									
Dimensional drawings in mm												
Maximum ratings												
Storage temperature T_{st}		ºC	-40 … +105			-40 … +105					-40 … +105	
Operating temperature T_a		ºC	-25 … +85			-25 … +85					-25 … +85	
Compensated temperature T_c		ºC	0 … +70			0 … +70					0 … +70	
Supply voltage (min./max.) V_{CC}		V	4.75 … 5.5			4.75… 5.5					4.75… 5.5	
Supply current (max.) I_{CC} (I_A=0)		mA	7.0			7.0					7.0	
Signal output current (max.) I_A		mA	2.0			2.0					2.0	
DC breakdown voltage (min.) V_{is}		V	500			500					500	
Output signal at sensor failure		V	0.01			0.01					0.01	
Temperature characteristics V_{CC} = 15 V within T_c												
Temperature coefficient	of	%FS/K	±0.015			±0.015					±0.015	
Temperature coefficient	of	%FS/K	±0.015			±0.015					±0.015	
Characteristics T_a = 25 ºC, V_{CC} = 15 V, I_A < 0.1 mA												
Response time (typ.) t_{10-90}		ms	1			1					1	
Offset V_{AO}		V	0.5 ±0.015			0.5 ±0.015					2.5 ±0.015	
Nonlinearity (typ.) L		%FS	±0.1			±0.1					±0.25	
Output span V_{FS}		V	4.0 ±0.015			4.0 ±0.015					4.0 ±0.015	
Over pressure (min.) p_{ov}		bar	1.5 x p_r			1.5 x p_r					1.5 x p_r	
Rated pressure p_r		bar	1.000	10.00	25.00	0.100	0.400	1.000	6.000	10.00	0.100	0.250
Ordering code[1]			B58620T0510A001	B58620T0510A004	B58620T0510A005	B58621K0510A006	B58621K0510A008	B58621K0510A009	B58621K0510A011	B58621K0510A012	B58623K0510A014	B58623K0510A015

[1] Other pressure ranges on request.

Pressure Transmitters

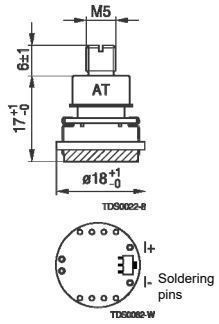
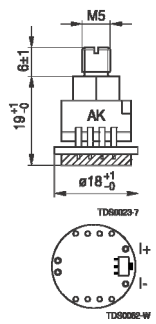
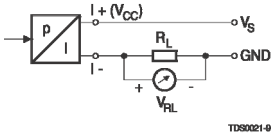
Technical data

Type											
		CAU-T with stainless steel housing, voltage output									
Pressure measurement		Absolute		Gauge					Gauge, symmetrical		
Measured media		Non-aggressive gases		Non-aggressive fluids and gases							
Output signal		0.5 V … 4.5 V, calibrated and temperature compensated									
Terminal assignment		Supply voltage V_{CC}: Pin 1 (brown), Output voltage V_A: Pin 2 (white), Ground GND: Pin 3 (blue), Ground (Kelvin guidance) GND_A: Pin 4 (black)									
Dimensional drawings in mm		 A shielded 4-pole cable (2 m) with a modified (pressure equalization) female M12 locking plug is included in delivery									
Maximum ratings											
Storage temperature T_{st}	°C	-30 … +85		-30 … +85					-30 … +85		
Operating temperature T_a	°C	-25 … +85		-25 … +85					-25 … +85		
Compensated temperature T_c	°C	0 … +70		0 … +70					0 … +70		
Supply voltage (min./max.) V_{CC}	V	7.5 … 30		7.5 … 30					7.5 … 30		
Supply current (max.) I_{CC} (I_A=0)	mA	7.0		7.0					7.0		
Signal output current (max.) I_A	mA	2.0		2.0					2.0		
DC breakdown voltage (min.) V_{is}	V	500		500					500		
Output signal at sensor failure (max.) V_{ERR}	V	0.01		0.01					0.01		
Temperature characteristics V_{CC} = 15 V within T_c											
Temperature coefficient of offset (typ.) TCV_{AO}	%FS/K	±0.015		±0.015					±0.015		
Temperature coefficient of span (typ.) TCV_{FS}	%FS/K	±0.015		±0.015					±0.015		
Characteristics T_a = 25 °C, V_{CC} = 15 V, I_A < 0.1 mA											
Response time (typ.) t_{10-90}	ms	1		1					1		
Offset V_{AO}	V	0.5 ±0.015		0.5 ±0.015					2.5 ±0.015		
Nonlinearity (typ.) L	%FS	±0.1		±0.1					±0.25		
Output span V_{FS}	V	4.0 ±0.015		4.0 ±0.015					4.0 ±0.015		
Over pressure (min.) p_{ov}	bar	1.5 x p_r		1.5 x p_r					1.5 x p_r		
Rated pressure p_r	bar	2.500	25.00	0.100	1.000	2.500	10.00	25.00	0.100	0.400	1.000
Ordering code[1]		B58620H5810A019	B58620H5810A022	B58621H5810A023	B58621H5810A026	B58621H5810A027	B58621H5810A029	B58621H5810A030	B58623H5810A031	B58623H5810A033	B58623H5810A034

[1] Other pressure ranges on request.

Pressure Transmitters

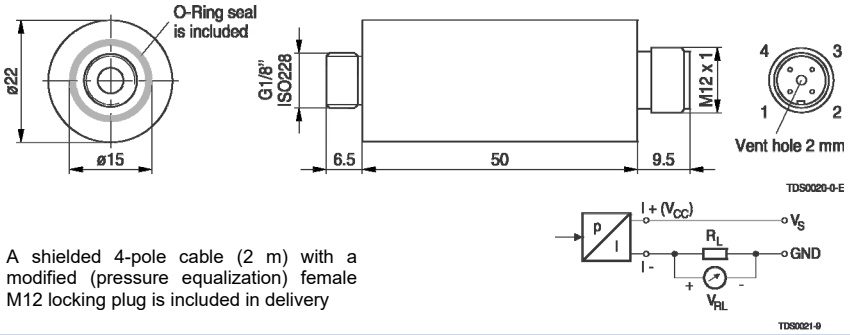
Technical data

Type		CAU-T without stainless steel housing, current output			
Pressure measurement		Absolute	Gauge		
Measured media		Non-aggressive gases	Non-aggressive fluids and gases		
Output signal		4 mA … 20 mA, calibrated and temperature compensated			
Terminal assignment		Positive supply voltage: I+, Negative supply voltage: I-			
Dimensional drawings in mm					
Maximum ratings					
Storage temperature T_{st}	°C	-40 … +105	-40 … +105		
Operating temperature T_a	°C	-25 … +85	-25 … +85		
Compensated temperature T_c	°C	0 … +70	0 … +70		
Supply voltage (min./max.) V_{CC}	V	10 … 30	10 … 30		
Current limit I_{CCmax}	mA	23	23		
DC breakdown voltage (min.) V_{is}	V	500	500		
Load resistance (max.) R_L	Ω	1000	1000		
Output signal at sensor failure (max.) I_{ERR}	mA	3	3		
Temperature characteristics V_{CC} = 15 V within T_c					
Temperature coefficient of offset (typ.) TCI_{CCO}	%FS/K	±0.015	±0.015		
Temperature coefficient of span (typ.) TCI_{FS}	%FS/K	±0.015	±0.015		
Characteristics T_a = 25 °C, V_{CC} = 15 V, I_A < 0.1 mA					
Response time (typ.) t_{10-90}	ms	1	1		
Offset I_{CCO}	mA	4 ±0.08	4 ±0.08		
Nonlinearity (typ.) L	%FS	±0.1	±0.1		
Output span I_{FS}	mA	16 ±0.08	16 ±0.08		
Over pressure (min.) p_{ov}	bar	1.5 x p_r	1.5 x p_r		
Rated pressure p_r	bar	25.00	2.500	6.000	10.00
Ordering code[1]		B58620T0520A005	B58621K0520A005	B58621K0520A006	B58621K0520A007

[1] Other pressure ranges on request.

Pressure Transmitters

Technical data

Type		**CAU-T with stainless steel housing, current output**					
Pressure measurement		Absolute		Gauge		Gauge, symmetrical	
Measured media		Non-aggressive gases		Non-aggressive fluids and gases			
Output signal		4 mA … 20 mA, calibrated and temperature compensated					
Terminal assignment		Positive supply voltage I+ (V_{CC}): Pin 1 (brown), Negative supply voltage I-: Pin 3 (blue)					
Dimensional drawings in mm		 A shielded 4-pole cable (2 m) with a modified (pressure equalization) female M12 locking plug is included in delivery					
Maximum ratings							
Storage temperature T_{st}	°C	-30 … +85		-30 … +85		-30 … +85	
Operating temperature T_a	°C	-25 … +85		-25 … +85		-25 … +85	
Compensated temperature T_c	°C	0 … +70		0 … +70		0 … +70	
Supply voltage (min./max.) V_{CC}	V	10 … 30		10 … 30		10 … 30	
Current limit I_{CCmax}	mA	23		23		23	
DC breakdown voltage (min.) V_{is}	V	500		500		500	
Load resistance (max.) R_L	Ω	1000		1000		1000	
Output signal at sensor failure (max.) I_{ERR}	mA	3		3		3	
Temperature characteristics V_{CC} = 15V within T_c							
Temperature coefficient of offset (typ.) TCI_{CCO}	%FS/K	±0.015		±0.015		±0.015	
Temperature coefficient of span (typ.) TCI_{FS}	%FS/K	±0.015		±0.015		±0.015	
Characteristics T_a = 25 °C, V_{CC} = 15 V, R_L = 100 Ω							
Response time (typ.) t_{10-90}	ms	1		1		1	
Offset I_{CCO}	mA	4 ±0.08		4 ±0.08		12 ±0.08	
Nonlinearity (typ.) L	%FS	±0.1		±0.1		±0.25	
Output span I_{FS}	mA	16 ±0.08		16 ±0.08		16 ±0.08	
Over pressure (min.) p_{ov}	bar	1.5 x p_r		1.5 x p_r		1.5 x p_r	
Rated pressure p_r	bar	6.000	25.00	0.100	1.000	10.00	0.250	0.800
Ordering code[1)]		B58620H5820A037	B58620H5820A039	B58621H5820A040	B58621H5820A043	B58621H5820A046	B58623H5820A049	B58623U2700B311

[1)] Other pressure ranges on request.

Pressure Transmitters

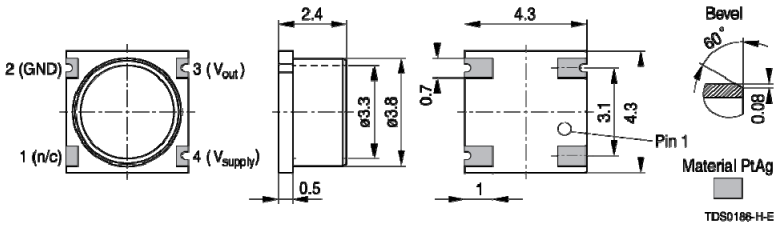
Technical data

Type		AC-T series, KD types, voltage output		AC-T series, KC types, voltage output	
Pressure measurement		Gauge	Gauge, symmetr.	Gauge	Gauge, sym.
Measured media		Non-aggressive fluids and gases		Non-aggressive fluids and gases	
Output signal		0.5 V … 4.5 V, calibrated and temperature compensated			
Terminal assignment		Supply voltage V_{CC}: Pin 1, Ground GND: Pin 2, Output signal (reference to GND) V_A: Pin 3			
Dimensional drawings in mm		For PCB mounting / Terminal assignment		For PCB mounting / Terminal assignment	
Maximum ratings					
Storage temperature T_{st}	°C	-40 … +105	-40 … +105	-40 … +105	-40 … +105
Operating temperature T_a	°C	-25 … +85	-25 … +85	-25 … +85	-25 … +85
Compensated temperature T_c	°C	0 … +70	0 … +70	0 … +70	0 … +70
Supply voltage (min./max.) V_{CC}	V	4.75 … 5.5	4.75 … 5.5	4.75 … 5.5	4.75 … 5.5
Supply current (max.) I_{CC} (I_A=0)	mA	7.0	7.0	7.0	7.0
Signal output current (max.) I_A	mA	2.0	2.0	2.0	2.0
DC breakdown voltage (min.) V_{is}	V	500	500	500	500
Output signal at sensor failure (max.) V_{ERR}	V	0.01	0.01	0.01	0.01
Temperature characteristics V_{CC} = 5 V within T_c					
Temperature coefficient of offset (typ.) TCV_{AO}	%FS/K	±0.015	±0.015	±0.015	±0.015
Temperature coefficient of span (typ.) TCV_{FS}	%FS/K	±0.015	±0.015	±0.015	±0.015
Characteristics T_a = 25 °C, V_{CC} = 5 V, I_A < 0.1 mA					
Response time (typ.) t_{10-90}	ms	1	1	1	1
Offset V_{AO}	V	0.5 ±0.015	2.5 ±0.015	0.5 ±0.015	2.5 ±0.015
Nonlinearity (typ.) L	%FS	±0.1	±0.25	±0.1	±0.25
Output span V_{FS}	V	4.0 ±0.015	4.0 ±0.015	4.0 ±0.015	4.0 ±0.015
Over pressure (min.) p_{ov}	bar	1.5 x p_r	1.5 x p_r	1.5 x p_r	1.5 x p_r
Rated pressure p_r	bar	0.100 / 0.250 / 0.400 / 1.000	0.100 / 0.400	0.100 / 1.000 / 2.500 / 6.000 / 25.00	0.100 / 1.000
Ordering code[1]		B58621K1110A054 / B58621K1110A055 / B58621K1110A056 / B58621K1110A057	B58623K1110A058 / B58623K1110A060	B58621K1510A062 / B58621K1510A065 / B58621K1510A066 / B58621K1510A067 / B58621K1510A069	B58623K1510A070 / B58623K1510A073

[1] Other pressure ranges on request.

Pressure Transmitters

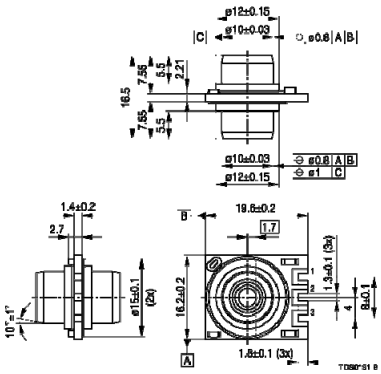
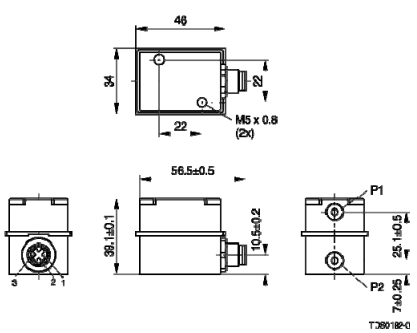
Technical data

Type		ASB 1200 VR SMD
Pressure measurement		Absolute
Measured media		Non-aggressive gases
Output signal		10% … 90% V_{CC}, calibrated and temperature compensated
Terminal assignment		Supply voltage V_{CC}: Pin 4, Ground GND: Pin 2, Output signal V_A: Pin 3
Dimensional drawings in mm		
Maximum ratings		
Storage temperature T_{st}	°C	-40 … +125
Operating temperature T_a	°C	-25 … +85
Compensated temperature T_c	°C	0 … +70
Supply voltage (min./max.) V_{CC}	V	2.7 … 5.5
Supply current (max.) I_{CC} (I_A=0)	mA	2.5
Signal output current (max.) I_A	mA	2.0
Startup time (max.) t_{STA}	ms	10
Characteristics V_{CC} = 5 V within T_c		
Basic accuracy (typ.)	%FS	± 2
Characteristics T_a = 25 °C, V_{CC} = 5 V, I_A < 0.1 mA		
Response time (typ.) t_{10-90}	ms	2
Offset (typ.) V_{AO}	V	10% V_{CC} at 200 mbar
Nonlinearity (typ.) L	%FS	±0.1
Output span V_{FS}	V	80% V_{CC}
Resolution r_{OUT}	bit	12
Over pressure (min.) p_{ov}	bar	2 x p_r
Burst pressure (min.) p_{burst}	bar	3 x p_r
Rated pressure p_r	bar	0.2 … 1.2
Ordering code[1)]		B58620S3300B360

[1)] Other pressure ranges on request.

Pressure Transmitters

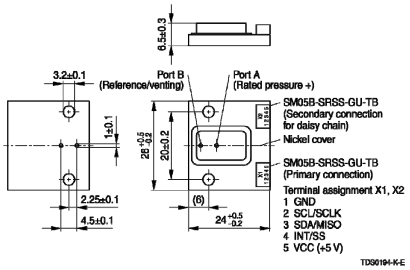
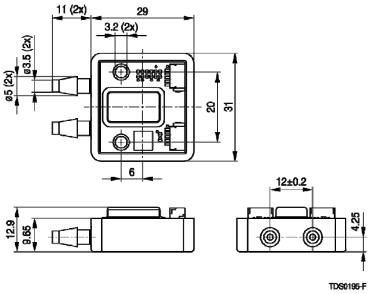
Technical data

Type		MiniCell™ without housing					MiniCell™ with stainless steel housing				
Pressure measurement		Differential					Differential				
Measured media		High resistance against media like diluted acids, contaminated air, exhaust gases									
Output signal		0.5 V … 4.5 V, 10% … 90% V_{CC}, calibrated and temperature compensated									
Terminal assignment		Supply voltage V_{CC}: Pin 1, Ground GND: Pin 2, Output signal V_A: Pin 3									
Dimensional drawings in mm											
Maximum ratings											
Storage temperature T_{st}	°C	-40 … +140					-40 … +140				
Operating temperature T_a	°C	-40 … +140					-20 … +140				
Compensated temperature T_c	°C	-40 … +140					-20 … +140				
Supply voltage (min./max.) V_{CC}	V	4.5 … 5.5					4.5 … 5.5				
Supply current (max.) I_{CC} (I_A=0)	mA	7.0					7.0				
Signal output current (max.) I_A	mA	2.0					2.0				
Load resistor (min.) R_L	kΩ	2.7					2.7				
Overvoltage (min.) V_{OV}	V	33					33				
Output signal at sensor failure (max.) V_{ERR}	V	0.25					0.25				
Characteristics T_a = 25 °C, V_{CC} = 5 V, I_A < 0.1 mA											
Response time (typ.) t_{10-90}	ms	10					10				
Nonlinearity (typ.) L	%FS	±0.25					±0.25				
Total error E_T (T_a = 0… 85 °C)	%FS	±2.0	±1.5	±1.0	±1.0	±1.0	±2.0	±1.5	±1.0	±1.0	±1.0
Total error E_T (within T_c)	%FS	±2.5	±2.0	±1.5	±1.5	±1.5	±2.5	±2.0	±1.5	±1.5	±1.5
Over pressure (max.) p_{ov}	bar	2.000	2.500	5.000	10.00	20.00	2.000	2.500	5.000	10.00	20.00
Rated pressure p_r	bar	0.500	1.000	2.500	5.000	10.00	0.500	1.000	2.500	5.000	10.00
Ordering code[1)]		B58622M3273B359	B58622M3214B506	B58622M3244B507	B58622M3274B508	B58622M3215B509	B58622M3273B745	B58622M3214B746	B58622M3244B747	B58622M3274B748	B58622M3215B749

[1)] Other pressure ranges on request.

Pressure Transmitters

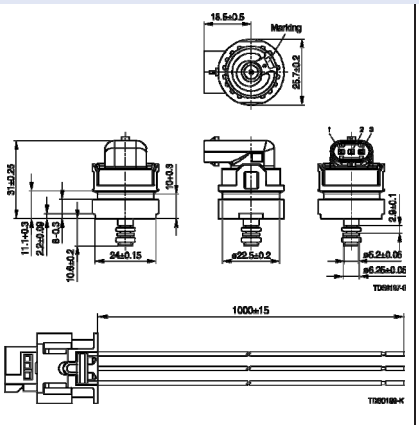
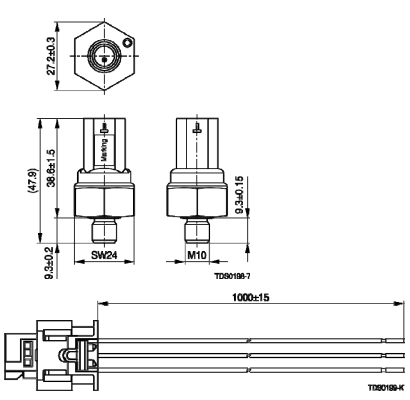
Technical data

Type		AVD, Flat design			AVD, Flat design with tube interface		
Pressure measurement		Differential			Differential		
Measured media		Air, non-aggressive gases					
Output signal		SPI digital output			I^2C digital output		
Terminal assignment		Pin 1: Ground GND, Pin 2: Serial Clock SCLK, Pin 3: Master Input Slave Output MISO, Pin 4: Slave Select SS, Pin 5: Supply voltage V_{CC}			Pin 1: Ground GND, Pin 2: Serial Clock Line SCL, Pin 3: Serial Data Line SDA, Pin 4: Internal function INT, Pin 5: Supply voltage V_{CC}		
Dimensional drawings in mm							
Maximum ratings							
Storage temperature T_{st}	°C	-30 … +70			-30 … +70		
Operating temperature T_a	°C	-20 … +70			-20 … +70		
Compensated temperature T_c	°C	-20 … +70			-20 … +70		
Supply voltage (min./max.) V_{CC}	V	2.7 … 5.5			2.7 … 5.5		
Supply current (max.) I_{CC} (I_A=0)	mA	10			10		
Characteristics T_a = 25 °C, V_{CC} = 5 V							
Digital output range D_A (10 … 90% of 14 bit)	digit	1637 … 14745			1637 … 14745		
Offset (typ.) D_{AO}	digit	1637			1637		
Signal span (typ.) D_{FS}	digit	13107			13107		
Temperature output range (-50… +150 °C)	digit	0 … 2047			0 … 2047		
Offset error (typ.) E_{AO}	%FS	±1.0	±0.2	±0.1	±1.0	±0.2	±0.1
Nonlinearity (typ.) L	%FS	±0.15	±0.15	±0.15	±0.15	±0.15	±0.15
Total error (typ.) E_T @ T_c	%FS	±1.5	±0.45	±0.35	±1.5	±0.45	±0.35
Temperature signal error (typ.) E_t	K	±2.0	±2.0	±2.0	±2.0	±2.0	±2.0
Configuration, digital interface							
System clock frequency	MHz	4			4		
Update period	ms	0.5			0.5		
I^2C address		0 x 10	0 x 20	0 x 30	0 x 10	0 x 20	0 x 30
Sleep mode		inactive			inactive		
Over pressure (max.) p_{ov}	bar	0.160	1.000	14.00	0.160	1.000	14.00
Rated pressure p_r	bar	0.016	0.100	7.000	0.016	0.100	7.000
Ordering code[1)]		B58621V4121B538	B58621V2712B537	B58621V2894B536	B58621V4121B765	B58621V2712B766	B58621V2894B767

[1)] Other pressure ranges on request.

Pressure Transmitters

Technical data

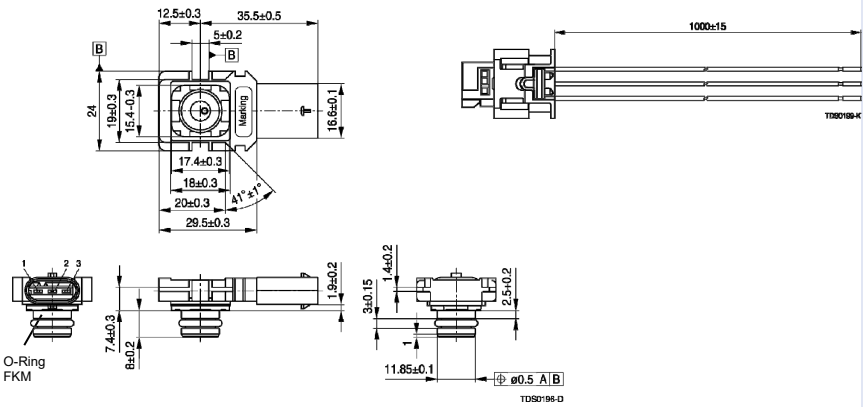
Type	AFA with plastic housing	AFA with stainless steel housing
Pressure measurement	Absolute	Absolute
Measured media	High resistance to non-freezing media like fuel, diluted acids, contaminated air	
Output signal	10% … 90% V_{CC}, calibrated and temperature compensated	
Terminal assignment	Supply voltage V_{CC}: Pin 1 (red), Ground GND: Pin 3 (black), Output signal V_A: Pin 2 (blue)	
Dimensional drawings in mm		

Maximum ratings			
Storage temperature T_{st}	°C	-40 … +125	-40 … +125
Operating temperature T_a	°C	-40 … +125	-20 … +125
Compensated temperature T_c	°C	-40 … +125	-20 … +125
Supply voltage (min./max.) V_{CC}	V	4.5 … 5.5	4.5 … 5.5
Supply current (max.) I_{CC} (I_A=0)	mA	7.0	7.0
Signal output current (max.) I_A	mA	2.5	2.5
Load resistor (min.) R_L	kΩ	2.0	2.0
Overvoltage (min./max.) V_{OV}	V	-33 … +33	-33 … +33
Characteristics T_a = 25 °C, V_{CC} = 5 V, I_A < 0.1 mA			
Response time (typ.) t_{10-90}	ms	1	1
Total error E_T (T_a = 20 … 80 °C)	%FS	±2.0	±2.0
Total error E_T (T_a = -40 ... 20 °C, 80 ... 125 °C) (min./ max.)	%FS	±3.0	±3.0
Burst pressure (min.) p_{burst}	bar	30.0	30.0
Over pressure (min.) p_{ov}	bar	15.00	15.00
Rated pressure p_r	bar	1.0… 11.0	1.0… 11.0
Ordering code[1)]		B58620F3800B830	B58620F3800B768

[1)] Other pressure ranges on request.

Pressure Transmitters

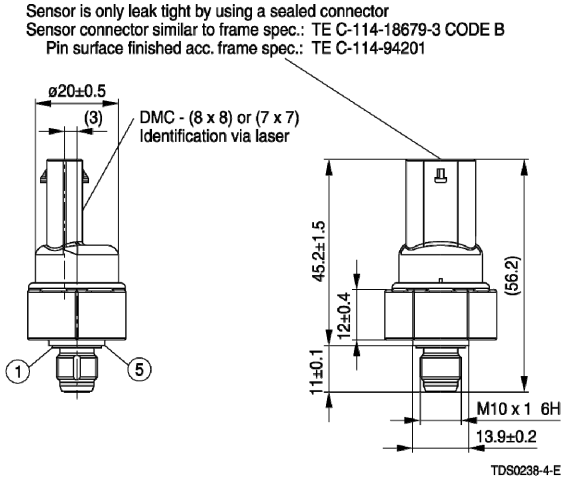
Technical data

Type		ALA
Pressure measurement		Absolute
Measured media		High resistance against media like diluted acids, contaminated air, exhaust gases
Output signal		0.5 V to 4.5 V, 10% … 90% V_{CC}, calibrated and temperature compensated
Terminal assignment		Supply voltage V_{CC}: Pin 1 (red), Ground GND: Pin 3 (black), Output signal V_A: Pin 2 (blue)
Dimensional drawings in mm		
Maximum ratings		
Operating temperature T_a	°C	-40 … +140
Operating temperature for wire T_{wo}	°C	-40 … +125
Compensated temperature T_c	°C	-40 … +125
Supply voltage (min./max.) V_{CC}	V	4.5 … 5.5
Supply current (max.) I_{CC} (I_A=0)	mA	9.5
Signal output current (max.) I_A	mA	2.5
Short circuit current I_{ASC}	mA	-25 … +25
Overvoltage (min./max.) V_{OV}	V	-33 … +33
Characteristics T_a = 25 °C, V_{CC} = 5 V, I_A < 0.1 mA		
Response time (typ.) t_{10-90}	ms	1
Total error E_T (T_a = 10 … 50 °C)	%FS	±1.0
Total error E_T (T_a = -40 ... 10 °C, 50 ... 125 °C) (min./ max.)	%FS	±3.0
Burst pressure (min.) p_{burst}	bar	4.5
Over pressure (min.) p_{ov}	bar	3.0
Rated pressure p_r	bar	0.5 … 1.5
Ordering code[1)]		B58620L3200B801

[1)] Other pressure ranges on request.

Pressure Transmitters

Technical data

Type		P/T-Sensor
Pressure measurement		Absolute
Measured media		High resistance against media like diluted acids, hydrogen, exhaust gases, HVAC refrigerants such as R744, R1234yf and others
Output signal		0.5 V to 4.5 V, 10% … 90% V_{CC}, calibrated and temperature compensated
Dimensional drawings in mm		
Maximum ratings		
Operating temperature T_a	ºC	-40 … +125
Operating temperature medium T_{wo}	ºC	-40 … +180
Compensated temperature T_c	ºC	-40 …+125
Supply voltage (min./max.) V_{CC}	V	5.0 … 36.0
Supply current (max.) I_{CC} (I_A=0)	mA	5 ...10
Signal output current (max.) I_A	mA	20
Characteristics T_a = 25 ºC, V_{CC} = 5 V, I_A < 0.1 mA		
Response time (typ.) t_{63}	s	4.9
Total error pressure E_P (T_a = -40 ... 125 °C)	%FS	±1
Total error temperature E_T (T_a = -40 ... 125 °C)	K	±1
Burst pressure (min.) p_{burst}	bar	3 x p_r
Over pressure (min.) p_{ov}	bar	1.5 x p_r
Rated pressure p_r	bar	0.0 … 170.0
Rated temperature range t_r	ºC	-40 …165°C
Ordering code		Upon request

Symbols and Terms

1) Storage temperature range T_{st}
A short term storage of the pressure sensor within the temperature range $T_{st,min}$ up to $T_{st,max}$ and without applied pressure and supply voltage will not affect the performance of the pressure sensor.

2) Operating temperature range T_a
An operation of the pressure sensor within the temperature range $T_{a,min}$ up to $T_{a,max}$ will not affect the performance of the pressure sensor.

3) Compensated temperature range T_c
While operating the pressure sensor within the temperature range $T_{c,min}$ up to $T_{c,max}$, the deviation of the output signal will not exceed the temperature specific measurement error. Out of the compensated temperature range, the deviations may increase.

4) Operating temperature range of wire T_{wo}
An operation of the connector within the temperature range $T_{wo,min}$ up to $T_{wo,max}$ will not affect the performance of the connector.

5) Supply voltage V_{CC}
$V_{CC,max}$ is the maximum of permissible supply voltage, which can be applied without damages.
$V_{CC,min}$ is the minimum of required supply voltage, which has to be applied for normal operation.

6) Supply current I_{CC}
$I_{CC,}$ is the maximum of current required to run the pressure sensor. Additional to the supply current I_{CC} the signal output current I_A is working.

7) Signal output current I_A
$I_{A,max}$ is the maximum permissible sink current of the signal output. The signal output current is depending on the voltage of the output signal and the load resistor R_L. Exceeding (e.g. short circuit) of the signal output current I_A may cause irreparable damages.

8) Short circuit current I_{ASC}
Maximum short circuit current at following conditions: minimum output voltage to V_{CC} or maximum output voltage to Ground

9) Load resistance R_L
Depending on V_S, the maximum working resistance is $R_L \geq (V_S - 10\ V) / 0.02\ A$.

10) DC voltage resistance V_{is}
The pressure sensor withstands a high voltage between the stainless steel pressure connection and the electrical connection V_{CC}, V_A and GND (all short-circuited) without damage.

11) Overvoltage V_{ov}
Maximum voltage being applied in any polarity to all contact pins without damaging the pressure sensor.

12) Output signal at sensor failure V_{ERR}
Output voltage of the sensor, if the signal conditioner detects a serious internal functional error.

13) Ratiometric output
The output voltage V_A is ratiometric to the supply voltage ($V_A \sim V_{CC}$).
Example: $V_A\ (p_{r,min}) = 0.04\ V/V$
with $V_{CC} = 5\ V$, $V_A\ (p_{r,min}) = 0.04\ V/V * 5\ V = 0.2\ V$
with $V_{CC} = 5.1\ V$, $V_A\ (p_{r,min}) = 0.04\ V/V * 5.1\ V = 0.204\ V$

14) Offset V_{A0}
The offset V_{A0} is the signal output $V_A\,(p = 0)$ at zero pressure. The value is related to the supply voltage V_{CC}.
One-sided output: $V_{A0} = 0.1\ V_{CC}$
Symmetrical output: $V_{A0} = 0.5\ V_{CC}$

15) Offset I_{CC0}
The offset I_{CC0} is the signal output $I_{CC}\ (p = 0)$ at zero pressure.

16) Offset D_{A0}
The offset D_{A0} is the digital signal output $D_A\,(p = 0)$.

17) Signal span (Full Scale)
One-sided output: $V_{FS} = FS = V_A\ (p_r) - V_{A0}$
Symmetrical output: $V_{FS} = FS = V_A\ (+p_r) - V_A\ (-p_r)$

18) Pressure output signal span (Full Scale)
$D_{FS} = FS = D_A(p_{r,max}) - D_A(p_{r,min})$

19) Sensitivity S
Within the pressure range 0 up to p_r the output voltage is $V_A(p_x) = V_{AO} + S \cdot p_x$

20) Non-linearity L (including pressure hysteresis)
The non-linearity is the deviation of the real sensor characteristic $V_A = f(p)$ from the ideal straight line.
It can be approximated by a polynomial of second order, with the maximum at $p_M = p_r / 2$.
The equation to calculate the non-linearity is:

$$L = \frac{V_A(p_x) - V_{A0}}{V_A(p_r) - V_{A0}} - \frac{p_x}{p_r}$$

Symbols and Terms

21) Temperature coefficients of the bridge resistance α_{RS}, β_{RS}
Bridge resistance at temperature T_x:
$R_S(T_x) = R_S(25\ °C) \cdot [1 + \alpha_{RS} \cdot (T_x - 25\ °C) + \beta_{RS} \cdot (T_x - 25\ °C)^2]$
Values are valid within the operating temperature range $T_{a,min}$ up to $T_{a,max}$
Out of the operating temperature range, the deviation may increase.

22) Temperature coefficients of the sensitivity α_S, β_S
Sensitivity at temperature T_x:
$S(T_x) = S(25\ °C) \cdot [1 + \alpha_S \cdot (T_x - 25\ °C) + \beta_S \cdot (T_x - 25\ °C)^2]$
Values are valid within the operating temperature range $T_{a,min}$ up to $T_{a,max}$
Out of the operating temperature range, the deviation may increase.

23) Temperature coefficients of offset TCV_{A0}
Offset at temperature T_x:
$V_{A0}(T_x) = V_{A0}(25\ °C) + V_{FS}(25\ °C) \cdot TCV_{A0}$
Values are valid within the compensated temperature range $T_{C,min}$ up to $T_{C,max}$
Out of the compensated temperature range, the deviation may increase.

24) Temperature coefficients of span TCV_{FS}
Span at temperature T_x:
$V_{FS}(T_x) = V_{FS}(25\ °C) \cdot [1 + (T_X - 25\ °C) \cdot TCV_{FS}]$
Values are valid within the compensated temperature range $T_{C,min}$ up to $T_{C,max}$
Out of the compensated temperature range, the deviation may increase.

25) Startup time t_{STA}
Time between the startup of the normal operation after power on and the first valid output signal.

26) Response time $t_{10\text{-}90}$
Delay between a pressure change (10 ... 90% p_r) and the corresponding signal output change (10 ... 90% FS) based on theoretical estimations.

27) Rated pressure p_r
Within the rated pressure range 0 up to p_r (symmetrical output: $\pm p_r$) the signal output characteristic corresponds to this specification.
Rated pressure for differential pressure sensors is defined as: $p_r = p_1 - p_2$.

28) Overpressure p_{OV}
1000 pressure cycles within the pressure range 0 up to p_{ov} will not affect the performance of the pressure sensor. Overpressure is defined as: $p_{ov} = p_1 - p_2$.

29) Burst pressure p_{burst}
Bust pressure p_{burst} is the maximum of permissible pressure applied without causing leakage of the sensor. Measurement performance of the sensor may be affected. Burst pressure is defined as: $p_{burst} = p_1 - p_2$.

30) Total measuring error E_T
Total measuring error E_T includes offset error, span error, nonlinearity, pressure hysteresis, temperature hysteresis, and signal noise. It describes the deviation of the signal to the nominal output characteristic.

Cautions and Warnings

Storage

All pressure sensors should be stored in their original packaging. Maximum storage and time in original package is 2 years from the date of production. Transmitters should neither be placed in harmful environments such as corrosive gases nor exposed to heat or direct sunlight, which may cause deformations. Similar effects may result from extreme storage temperatures and climatic conditions. Avoid storing the sensors in an environment where condensation may form or in a location exposed to corrosive gases, which will adversely affect their performance. Sensors should be stored upright with the connector area up and the pressure port down.

Storage as delivered in original package (sealed trays/ sealed blisters):

- Sealed as delivered
- Temperature range: +5 °C to +40 °C
- Relative humidity range: <60% RH
- Shelf life under these conditions: 24 months

Operation

Media compatibility with the pressure sensors has to be checked to prevent their failure. The use of other media can cause damage and malfunction. Never use pressure sensors in atmospheres containing explosive liquids or gases.

Ensure pressure equalization to the environment, if gauge pressure sensors are used. Avoid operating the pressure sensors in an environment where condensation may form or in a location exposed to corrosive gases. These environments adversely affect their performance.

If the operating pressure is not within the rated pressure range, it may change the output characteristics. Be sure that the applicable pressure does not exceed the over pressure, as it may damage the pressure sensor.

Do not exceed the maximum rated supply voltage nor the rated storage temperature range, as it may damage the pressure sensor.

Temperature variations in both the ambient conditions and the media (liquid or gas) can affect the accuracy of the output signal from the pressure sensors. Be sure to check the operating temperature range and thermal error specification of the pressure sensors to determine their suitability for the application.

Connections have to be wired in accordance with the terminal assignment specified in the data sheets. Care should be taken as reversed pin connections can damage the pressure transmitters or degrade their performance. Contact between the pressure sensor terminals and metals or other materials may cause errors in the output characteristics.

Handling/ Mounting

The sensor must be checked for correct application and the connector to be used. Mounting torque of pressure ports screwed in sensor housing has to be checked. The mounted pressure ports has to be tested to avoid leakage. Be sure that pressure ports fulfil temperature, media and pressure requirements. Prior to installing the sensor, the pressure inlet must be checked for soiling and blockage of the opening by any contaminants. Do not exceed the given mounting torque. If applicable, check length of screws for stable fixation. Release all mounting processes carefully.

Soldering

The thermal capacity of the pressure sensor is normally low, so steps should be taken to minimize the effects of external heat. High temperatures may lead to damage or changes in characteristics.

A non-corrosive type of flux resin should normally be used and complete removal of the flux is recommended.

Avoid rapid cooling due to dipping in solvent. Note that the output signal may change if pressure is applied to the terminals during soldering. Contact between the sensor terminals and metals or other materials may cause errors in the output characteristics.

This listing does not claim to be complete, but merely reflects the experience of TDK Electronics AG.

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