



Pressure sensors

Handling Guideline

Series/Type:	MiniCell AMD KA VR Z1E L ST
Ordering code:	B58622M32**B74*
Date:	2021-10-21
Version:	1.1

Applications

- Pumps and compressors
- Hydraulic and pneumatic systems
- Automotive test systems
- Energy and water management
- Filter monitoring
- Flow control
- Fluid level measurement
- Leak detection

Features

- Miniaturized differential pressure transmitter for industrial applications with small installation space - usage for gauge pressure also possible
- High resistance against media like diluted acids, contaminated air, exhaust gases
- Sensing element based on piezoresistive MEMS technology, media separation by steel membranes, robust housing, IP 67 protection
- High media resistance due to high alloyed steel: sensor cell AISI 316L, housing AISI 316, internal sealings EPDM
- Extended temperature range of -20 °C to 140 °C
- Voltage output signal (0.5 V to 4.5 V, ratiometric) proportional to pressure and supply voltage
- The integrated signal conditioner provides a calibrated output signal with a high immunity against electromagnetic influences (EMI) and overvoltage and reverse voltage protection.
- Various connecting possibilities to G 1/8" pressure ports and M12 electrical plug
- Pressure connectors for 6x4 mm tube enclosed
- Mounting direction will not influence the output signal.
- RoHS-compatible, halogen free according to IEC 61249-2-21 clause 3.1

Unpacking instructions

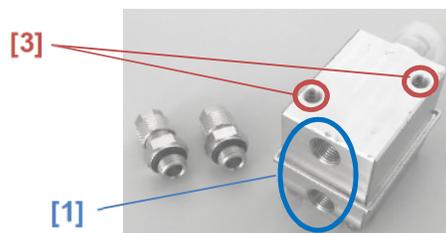


The product is packed in a reusable and recyclable cardboard box. Pull the tab to open the folding claps prior to lifting the cover.



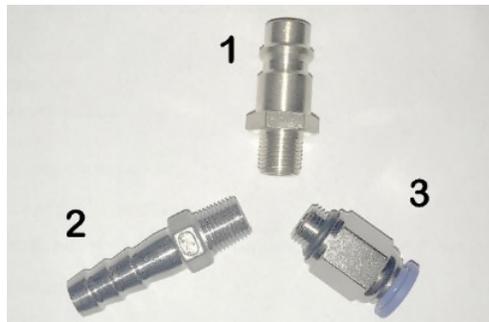
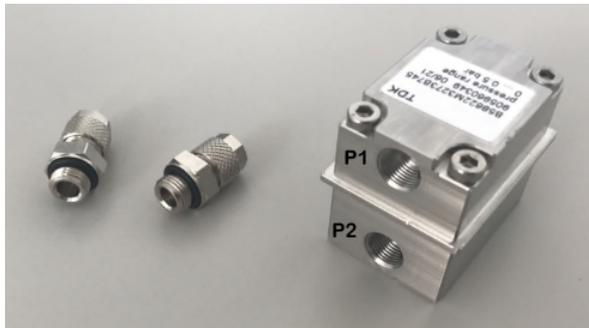
The product inside the box is protected by two foam covers. The transmitter and the two hose fits are placed inside individual plastic zipper bags as humidity protection. The bag of the hose fit may be placed inside the bag of the transmitter. Always store the product in the original package.

Handling instructions

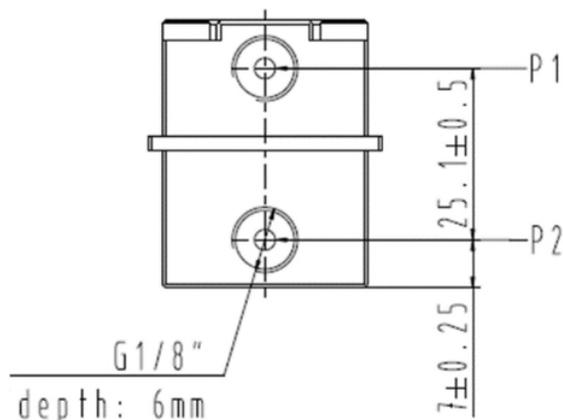


- [1] Pressure Connection
- [2] Power and signal connection
- [3] Mounting and fastening
- [4] Label and type designation

[1] Pressure Connection

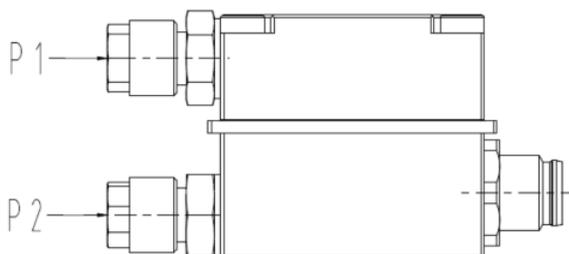


Each sensor package includes two identical hose connections for 6 mm tubes. Depending on the application any other connector with thread G1/8" can be used. Some examples are shown on the right hand side picture: (1) compressed air connect, (2) barbed hose fit and (3) a tube quick connector.



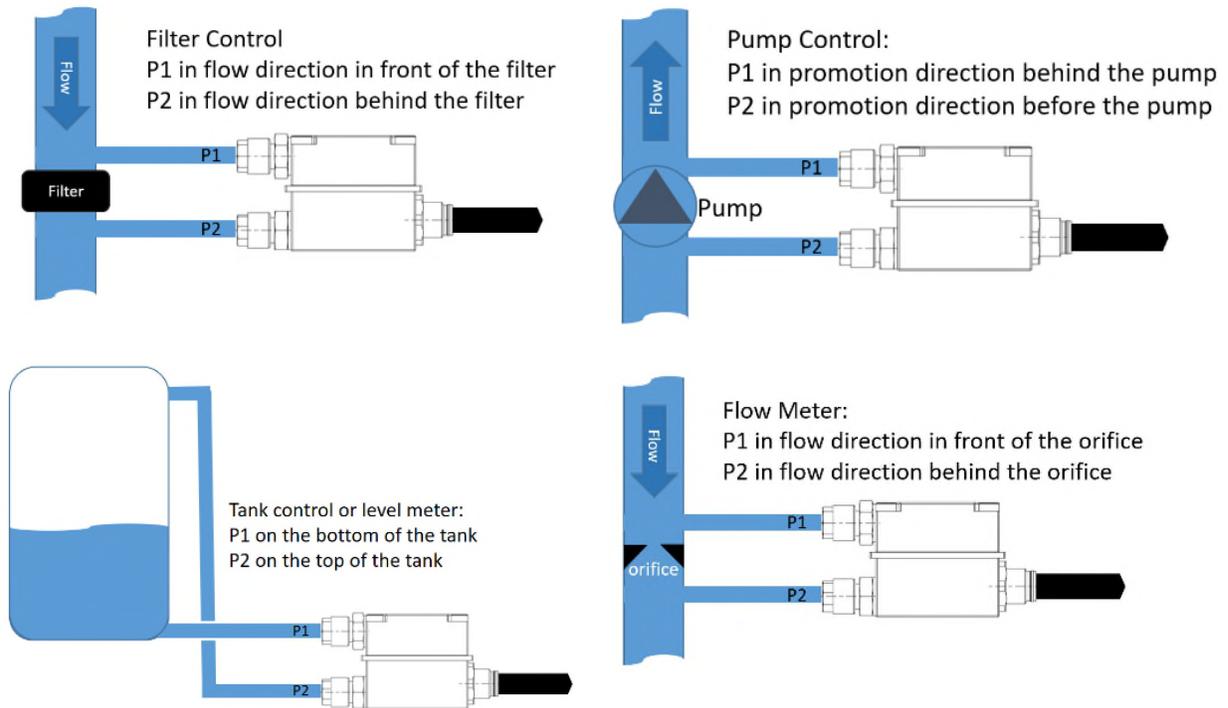
Note the depth of the G1/8" threads of 6mm. Make sure, that the selected pressure ports fulfil temperature, media and pressure requirements of the intended application and check the mounting torque of the ports. Before usage, test the leak tightness of the pressure connections.

(All dimensions are in mm)

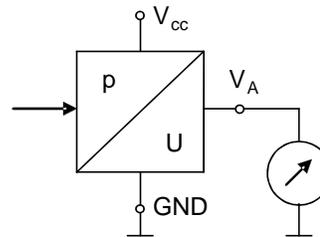
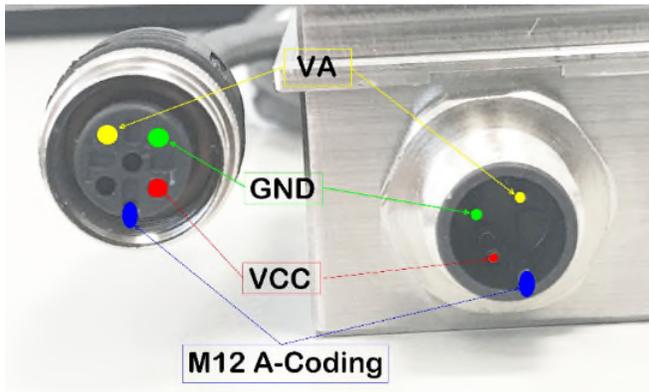


The device is unidirectional with a one-sided output. Therefore, the high-pressure side has to be connected to the P1 port at the top of the sensor. The top side can be easily identified as it bears the sensor label. The port P2 shall be connected to the lower pressure side. The P2 port is located under P1 across from the electrical connection. For gauge pressure measurement connection of P2 is not necessarily required but it should not be closed.

The following diagrams show the connection of P1 (high pressure connect) and P2 (low pressure connect) in typical applications.

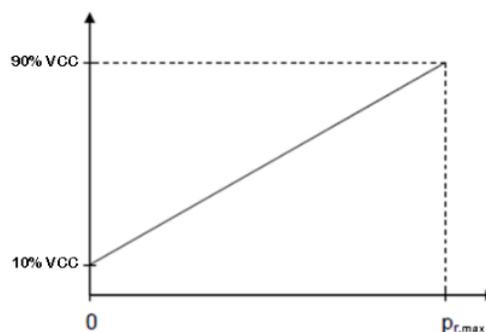
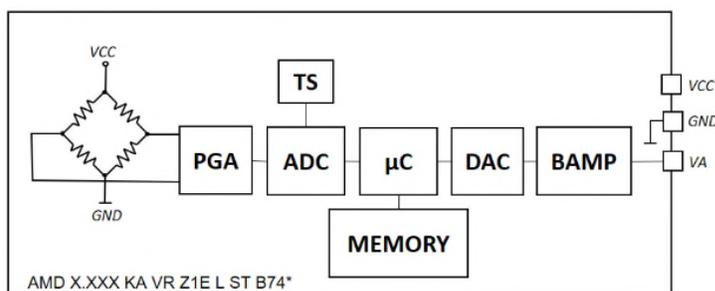


[2] Power and signal connection



Pin	Symbol	Signal
1	V _{CC}	Supply voltage
2	GND	Ground connected to housing
3	V _A	Output signal

The sensor shall be connected with a M12 connector, 3-pin A-code (IEC 61076-2-101). The wiring is shown on the left hand picture for ground (GND), supply voltage (VCC) and analogue output voltage (VA) with respect to the coding mark.

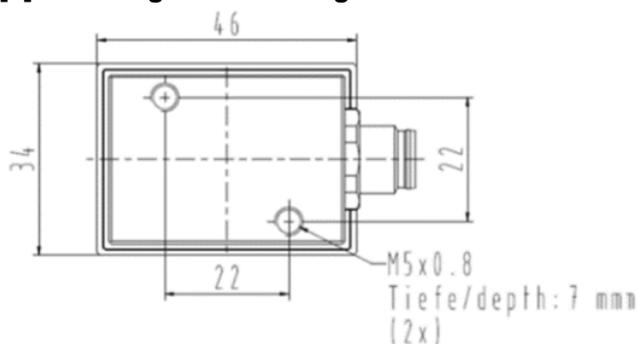


The internal signal conditioner maps the range of the differential pressure $p_r = 0 \dots p_{r,max}$ to the analogue output $V_A = 10\% V_{CC} \dots 90\% V_{CC}$. The pressure output is related to V_A by the following formula:

$$p_r = \frac{V_A - 0.1 V_{CC}}{0.8 V_{CC}} p_{r,max}$$

The supply voltage shall be stabilized between 4.5 and 5.5V. Please note that the output is ratiometric and scales with the input voltage. In consequence, any noise on the supply will add to the signal to noise ratio of the output.

[3] Mounting and fastening



Having a weight of approximately 350 g it is strongly recommended to securely fasten the sensor in operation by the two M5 threads on the sensor bottom. The use of stainless steel screws (AISI316 or similar) is recommended. Check the thickness of the baseplate and the screw length to assure sufficient penetration depth of minimum 5 mm into the threads. In case of vibration, lock washers shall be used. Check the recommended tightening torque handling instructions of your screws.

It is recommended to release all mounting processes carefully and perform a life testing of the set-up.

[4] Label and type designation



The labels on the sensor housing help to identify the type and pressure range of the product. Please note that the labels may change color, fade and vanish after installation or over lifetime.

Line 1: B586**M***** - Ordering code

Line 2: Lot number production week of a year CW/YY

Line 4 : Pressure range

The following table shows a lineup of available types, pressure ranges and ordering codes covered by this handling guideline.

Type	Rated differential pressure	Ordering Code
AMD 0.500 KA VR Z1E L ST B745	0 ... 0.5 bar	B58622M3273B745
AMD 1.000 KA VR Z1E L ST B746	0 ... 1.0 bar	B58622M3214B746
AMD 2.500 KA VR Z1E L ST B747	0 ... 2.5 bar	B58622M3244B747
AMD 5.000 KA VR Z1E L ST B748	0 ... 5.0 bar	B58622M3274B748
AMD 10.00 KA VR Z1E L ST B749	0 ... 10.0 bar	B58622M3215B749

The ordering code for one and the same product can be represented differently in data sheets, data books, other publications, on the company website, or in order-related documents such as shipping notes, order confirmations and product labels. **The varying representations of the ordering codes are due to different IT-systems and processes employed and do not affect the specifications of the respective products.** Detailed information can be found on the Internet under www.tdk-electronics.tdk.com/orderingcodes.

Cautions and warnings

Always refer to the TDK datasheet for the minimum and maximum ratings during storage and operation such as temperatures, operation voltages and pressures

Storage

All pressure sensors should be stored in their original packaging. Maximum storage and time in original package is 2 years after the date of production. Transmitters should not 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

Operation (general)

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.

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

Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule we are either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether a product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as hazardous)**. Useful information on this will be found in our Material Data Sheets on the Internet (www.tdk-electronics.tdk.com/material). Should you have any more detailed questions, please contact our sales offices.
5. We constantly strive to improve our products. Consequently, **the products described in this publication may change from time to time**. The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order.

We also **reserve the right to discontinue production and delivery of products**. Consequently, we cannot guarantee that all products named in this publication will always be available. The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.

6. Unless otherwise agreed in individual contracts, **all orders are subject to our General Terms and Conditions of Supply**.
7. **Our manufacturing sites serving the automotive business apply the IATF 16949 standard**. The IATF certifications confirm our compliance with requirements regarding the quality management system in the automotive industry. Referring to customer requirements and customer specific requirements ("CSR") TDK always has and will continue to have the policy of respecting individual agreements. Even if IATF 16949 may appear to support the acceptance of unilateral requirements, we hereby like to emphasize that **only requirements mutually agreed upon can and will be implemented in our Quality Management System**. For clarification purposes we like to point out that obligations from IATF 16949 shall only become legally binding if individually agreed upon.

Important notes

8. The trade names EPCOS, CarXield, CeraCharge, CeraDiode, CeraLink, CeraPad, CeraPlas, CSMP, CTVS, DeltaCap, DigiSiMic, ExoCore, FilterCap, FormFit, LeaXield, MiniBlue, MiniCell, MKD, MKK, ModCap, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PowerHap, PQSine, PQvar, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, ThermoFuse, WindCap, XieldCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.tdk-electronics.tdk.com/trademarks.

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