



Ultrasonic sensor module

Ultrasonic time-of-flight sensor with integrated driving unit

Series/Type: X150P0754
Ordering code: B59150X0754P030
Date: 2021-12-07
Version: 1.1.3

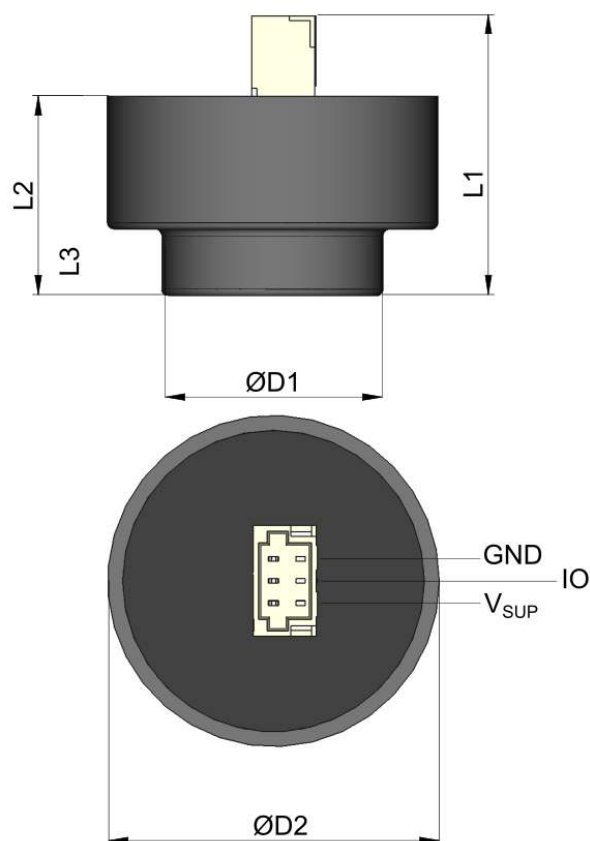
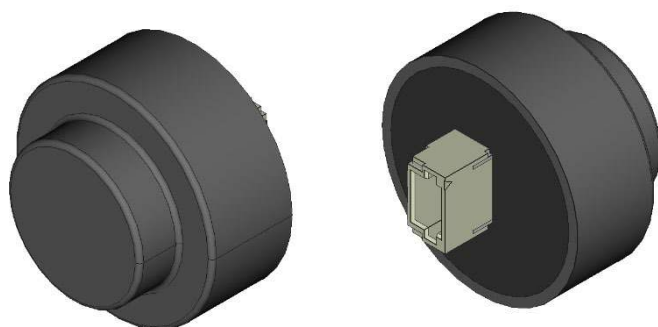
Piezo driven ultrasonic time-of-flight sensor module with integrated driving unit

Applications

- Distance and level measurement in air
- Obstacle detection in air

Features

- Digital 3-pin interface
- Compact, closed membrane ultrasonic sensor design
- Configurable by user
- 15 up to 200 cm measurement range
- Front side dust and splash water protected



Dimensions

	Parameter	Symbol	Unit	Typical
1	Front diameter	D1	mm	10
2	Total diameter	D2	mm	15
3	Total length	L1	mm	13
4	Pot length	L2	mm	9
5	Length of front cylinder	L3	mm	3

Electrical specification

	Parameter	Symbol	Unit	Typical
1	Supply voltage	V _{SUP}	V	12
2	Current consumption	I	mA	5.5
3	Power down mode	I	mA	<1
4	Communication Interface ¹⁾	proprietary bidirectional IO (3-pin), point to point architecture		
5	Connector	Harwin M40-3010346 compatible		

1) The IO line is not equipped with a pull-up resistor.

Functional parameters

	Parameter	Symbol	Unit	Typical
1	Minimal measuring distance ¹⁾	D _{min}	cm	15
2	Maximal measuring distance ¹⁾	D _{max}	cm	200
3	Directivity ²⁾	α	°	+/-30
4	Operating frequency ³⁾	f	kHz	73.5 +/- 1.5

1) Evaluated based on test target: cylindrical pole, 75 mm diameter, 1 m height, standard conditions for temperature and humidity.

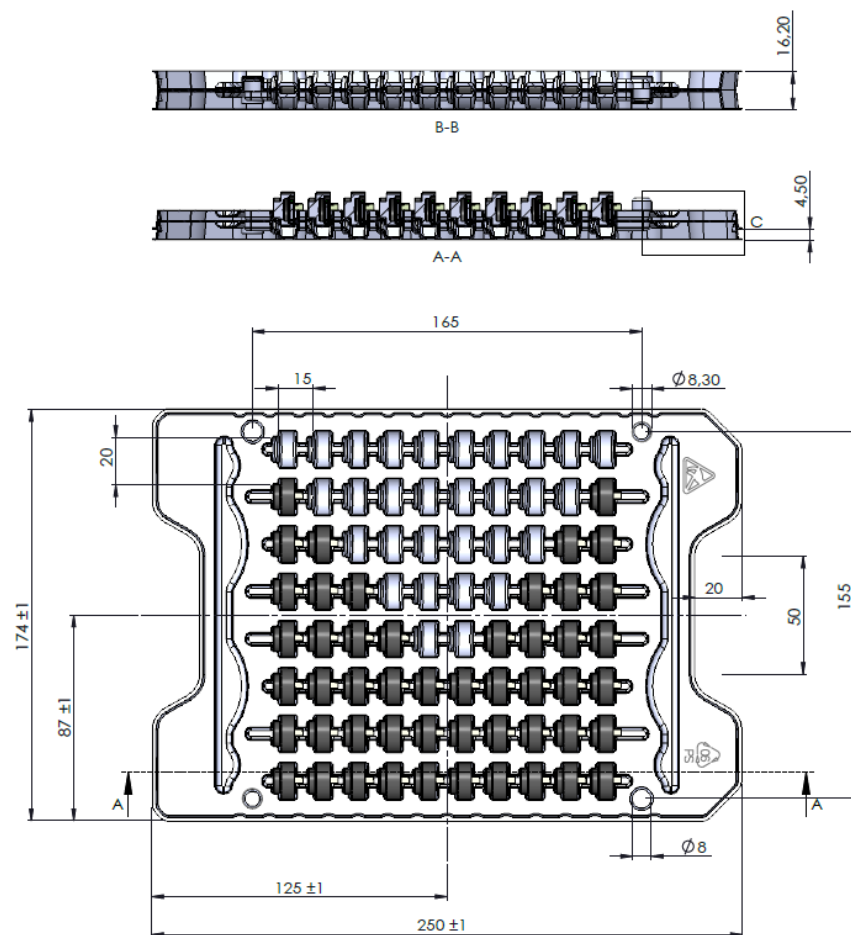
2) -6 dB sound pressure level, circular beam.

3) Parts are sorted, marked and packaged in classes with respect to their operating frequency to allow cooperative operation in send/receive mode.

Overall system performance depends on mounting conditions.

Packaging and labels

- Delivery in polystyrol trays
- 80 pcs. per tray
- Sensors are individually marked according to operation frequency class
- Each tray contains sensors of only one frequency class



Cautions and warnings

Handling

- Do not drop the component
- Do not use defect / dropped components
- Do not touch the 3-pin connector without ESD protection

Display of ordering codes for TDK Electronics products

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 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.

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.

Release 2020-06