

Product manual

Piezo Keypad

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1 PRODUCT DESCRIPTION



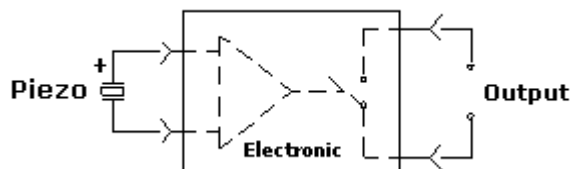
- IP 69K protection class, IK 05 impact strength
 - operating temperature from -25°C to +85°C
 - long lifetime of more than 20 million actuations
 - with mounting accessories: keypad is sealed into the housing with IP 68 protection class, mounting into the housing from the front or the rear
 - as standard: keypads are available as a number block with 12 or 16 keys and with an aluminium front
 - point illumination may be integrated into the individual key fields as optical feedback or for user navigation
 - the operating panel can be designed in several colours in both the aluminium and stainless steel versions
-
- the keypads can be adapted to customer requirements with respect to the outer geometry as well as to the number and arrangement of the keys
 - particularly suitable for use in outdoor applications due to their ability to resist extreme ambient conditions such as negative temperatures, ice and snow
 - completely sealed operating panel is easy to clean and resistant to common cleaning agents

Operation principle:

The piezo keypad is based on the principle of the piezoelectric effect. By pressing, a piezoceramic generates a voltage pulse. The power of the voltage pulse is amplified from the integrated electronic circuit to a bipolar switching output.

During the voltage pulse the electronic is switching for the specified pulse duration. The switching time of the electronic switching output depends on the actuation force and the operation speed.

Connection diagram of a single switch NO (Normally Closed):



In the unactuated condition, the piezo ceramic is in a high-impedance state and the switch has an output resistance greater than 10 MOhms. If the piezo-ceramic is actuated, the output resistance is reduced to a value smaller than 20 ohms.

This corresponds largely to the functionality of a conventional mechanical switch.

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2 TECHNICAL DATA AND DIMENSIONAL DRAWINGS

2.1 Technical Data

| <u>Electrical Data</u> | | |
|-------------------------|-------|--------|
| Rated Voltage max. | [VDC] | 50 |
| Rated Current max. | [mA] | 200 |
| Contact Resistance ON | [Ω] | < 7.5< |
| Contact Resistance OFF | [MΩ] | > 5 |
| Electrical Strength | [V] | 2500 |
| Contact Bounce Time | [ms] | < 1 |
| Rated Breaking Capacity | [mW] | 600 |

| <u>Mechanical Data</u> | | |
|------------------------------------|---------|-------------------------------------|
| Actuation Force | [N] | 1 – 3 * |
| Lifetime | [mill.] | > 20 |
| Shock Resistance (DIN EN 50102) | [IK] | Aluminum: 05 Stainless Steel: 04 |

* At ambient temperatures less than -10°C the actuating force may increase.

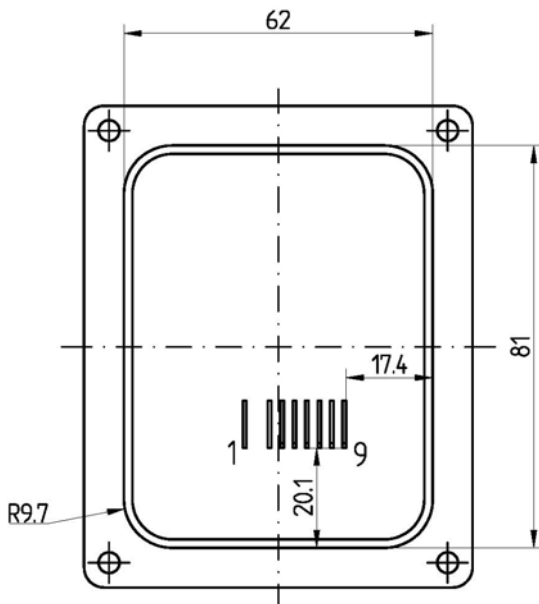
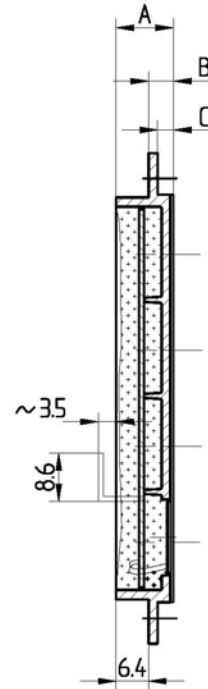
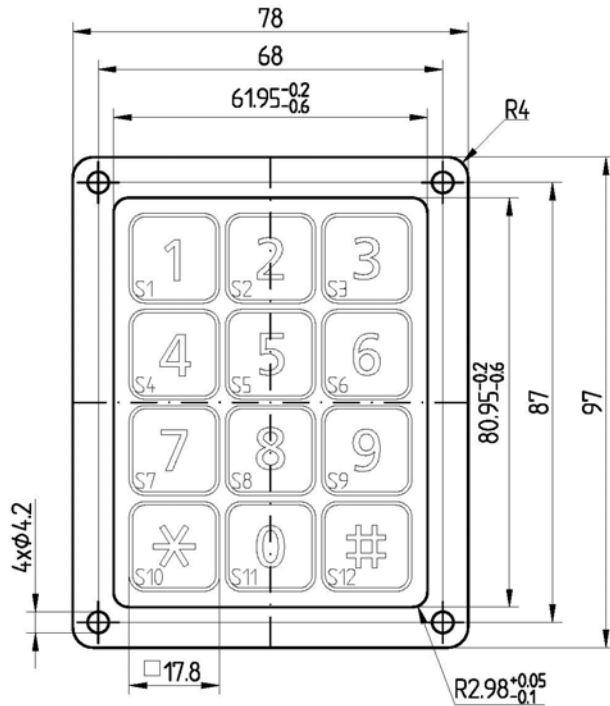
| <u>Climatical Data</u> | | |
|------------------------|------|------------|
| Operating Temperature | [°C] | -25 to +85 |
| Storage Temperature | [°C] | -40 to +85 |
| Degree of Protection * | [IP] | IP 69K |

* Note: The degree of protection depends on the mounting.

| Material | | |
|------------------|-----------------|---------------------|
| Part | Material | UL-Listing |
| Assembling plate | Ultradur | UL94, V-0 |
| Upper spacer | | File: PGGU2.MH26206 |
| Insulating disc | FR4 | UL94, V-0 |
| PCB | FR4 | UL94, V-0 |
| Adhesive | | no listing |
| Casting compound | | no listing |
| Piezo disc | PZT | |
| Front plate | Aluminium | |

2.2 Layout of 12 key keypad

Front-design can be varied.

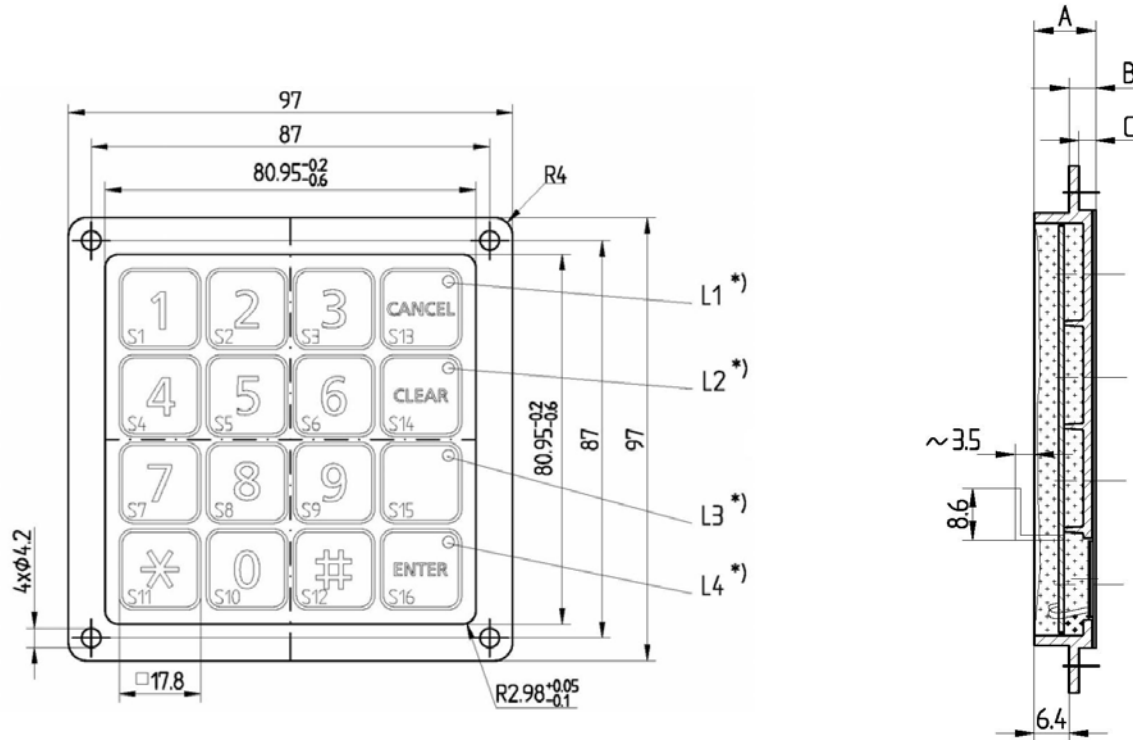


| Measures | A | B | C |
|--------------------------------|-------|------|--------------|
| Piezo Keypad 1068.1012.1110001 | 11.33 | 4.93 | 3.13 +/-0.11 |
| Piezo Keypad 1068.1012.2110001 | 11.23 | 4.83 | 3.03 +/-0.11 |

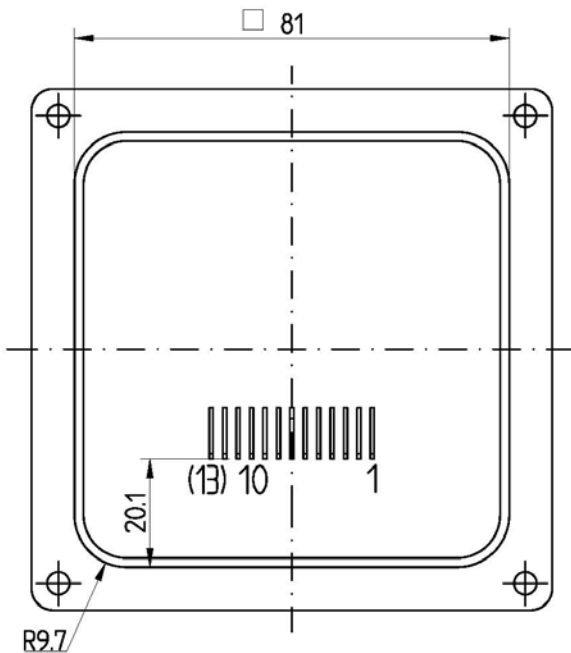
| | | PIN | | | | | | | | |
|---------|----|-----|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Graphic | 1 | 1 | | □ | | □ | | | | |
| | 2 | 2 | | □ | | | □ | | | |
| | 3 | 3 | | □ | | | | □ | | |
| | 4 | 4 | | □ | | | | | □ | |
| | 5 | 5 | | □ | | | | | | □ |
| | 6 | 6 | □ | | | □ | | | | |
| | 7 | 7 | □ | | | | □ | | | |
| | 8 | 8 | □ | | | | | □ | | |
| | 9 | 9 | □ | | | | | | □ | |
| | 10 | * | □ | | | | | | | □ |
| | 11 | 0 | | □ | □ | | | | | |
| | 12 | # | □ | | | | | | | □ |

Layout of 16 key keypad

Front-design can be varied.



| Measures | A | B | C |
|--------------------------------|-------|------|------|
| Piezo Keypad 1068.1016.1110001 | 11.33 | 4.93 | 3.13 |
| Piezo Keypad 1068.1016.2110001 | 11.23 | 4.83 | 3.03 |



PIN 11-13 for Point-Illumination

| | | PIN | | | | | | | | | | | | |
|---------|----|-------|---|---|---|---|---|---|---|----|----|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9* | 10 | 11 | 12 | 13 |
| Graphic | 1 | 1 | | | | | | | | | | | | |
| | 2 | 2 | | | | | | | | | | | | |
| | 3 | 3 | | | | | | | | | | | | |
| | 4 | 4 | | | | | | | | | | | | |
| | 5 | 5 | | | | | | | | | | | | |
| | 6 | 6 | | | | | | | | | | | | |
| | 7 | 7 | | | | | | | | | | | | |
| | 8 | 8 | | | | | | | | | | | | |
| | 9 | 9 | | | | | | | | | | | | |
| | 10 | 0 | | | | | | | | | | | | |
| | 11 | * | | | | | | | | | | | | |
| | 12 | # | | | | | | | | | | | | |
| | 13 | Canc | | | | | | | | | | | | |
| LEDs | 14 | Clear | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | |
| | 16 | Ent | | | | | | | | | | | | |
| | L1 | | | | | | | | | | | | | |
| L2 | | | | | | | | | | | | | | |
| L3 | | | | | | | | | | | | | | |
| L4 | | | | | | | | | | | | | | |

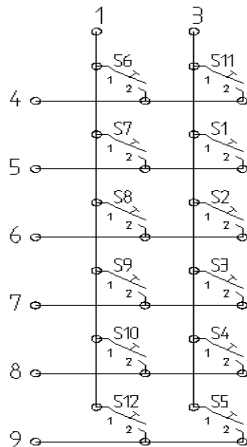
* Common Supply LED Supply GND

*) Schematic illustration of the position of point illumination.
The point illumination is customized and available on request.

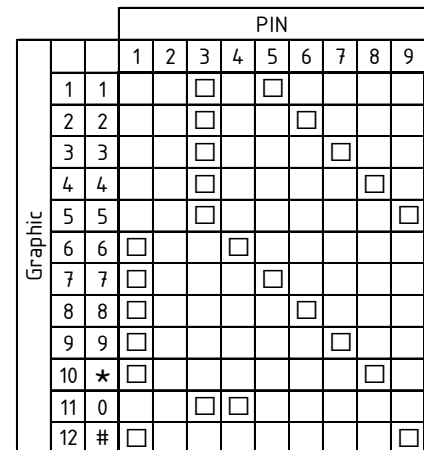
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2.4 Circuit diagram

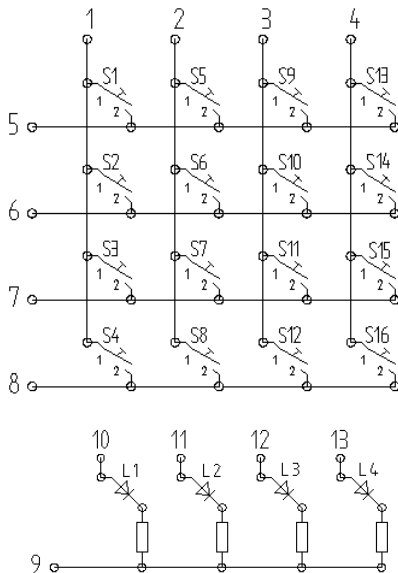
12 key keypad



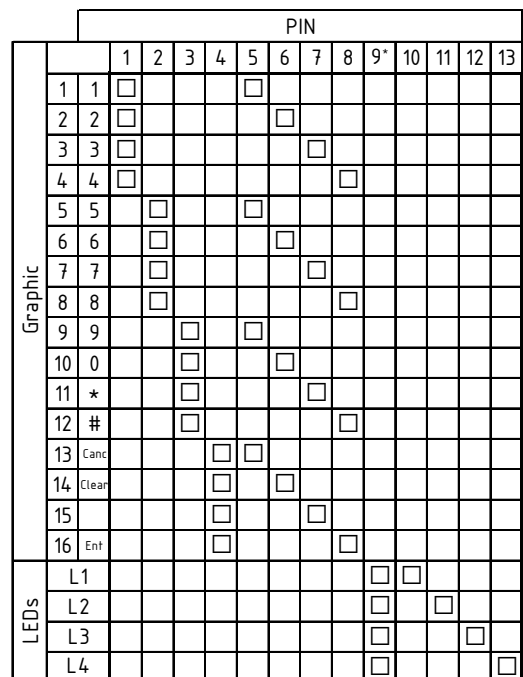
Pin 2 n. c.



16 key keypad



Pin 9 Led-Supply common GND



* Common Supply LED Supply GND

3 ORDER NUMBERS

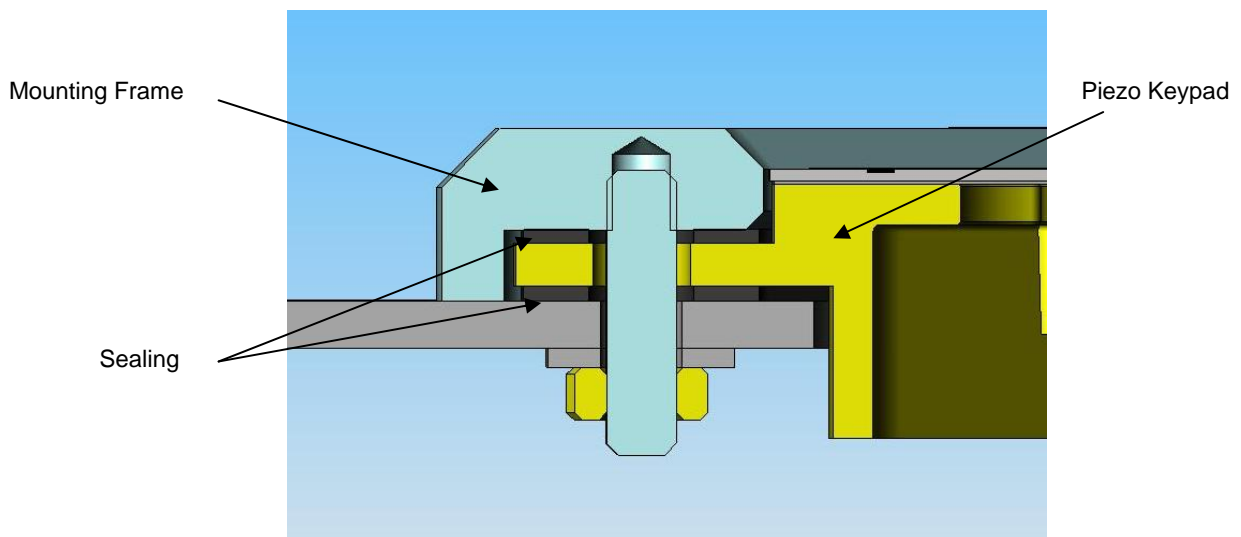
| | piezo keypad 12 keys | piezo keypad 16 keys |
|--|----------------------|----------------------|
| front aluminum, multi pin connector, standard lettering* | 1068.1012.1110001 | 1068.1016.1110001 |

* Note: The lettering corresponds to the standard layout as described under point 2.2 and 2.3.

4 ACCESSORIES

4.1 Accessory Kit

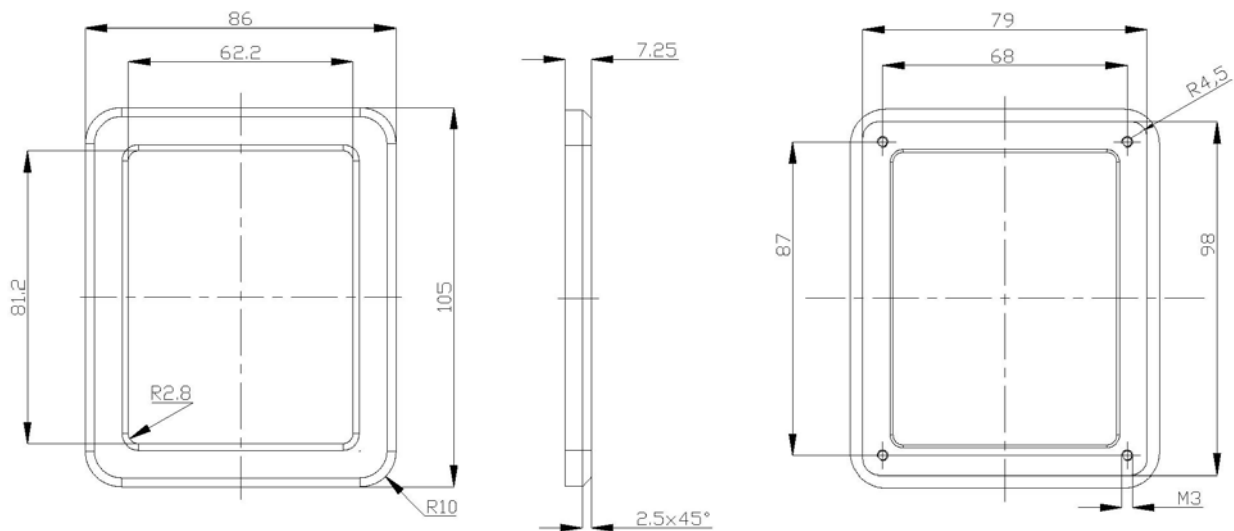
| | accessory kit for piezo keypad 12 keys | accessories kit for piezo keypad 16 keys |
|------------------------------------|--|--|
| Mounting Frame + Sealing frontside | 1068.1012.340 | 1068.1016.340 |



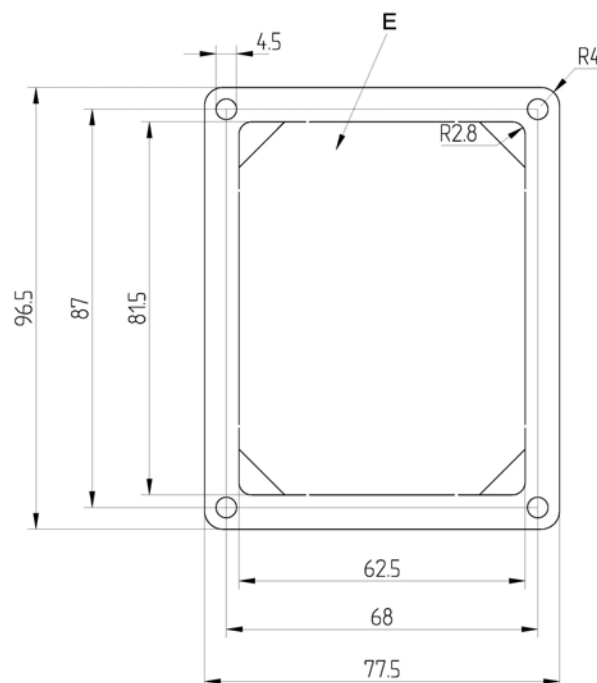
4.2 Dimensions Accessory Kit

Piezo Keypad 12 keys

Mounting Frame



Sealing



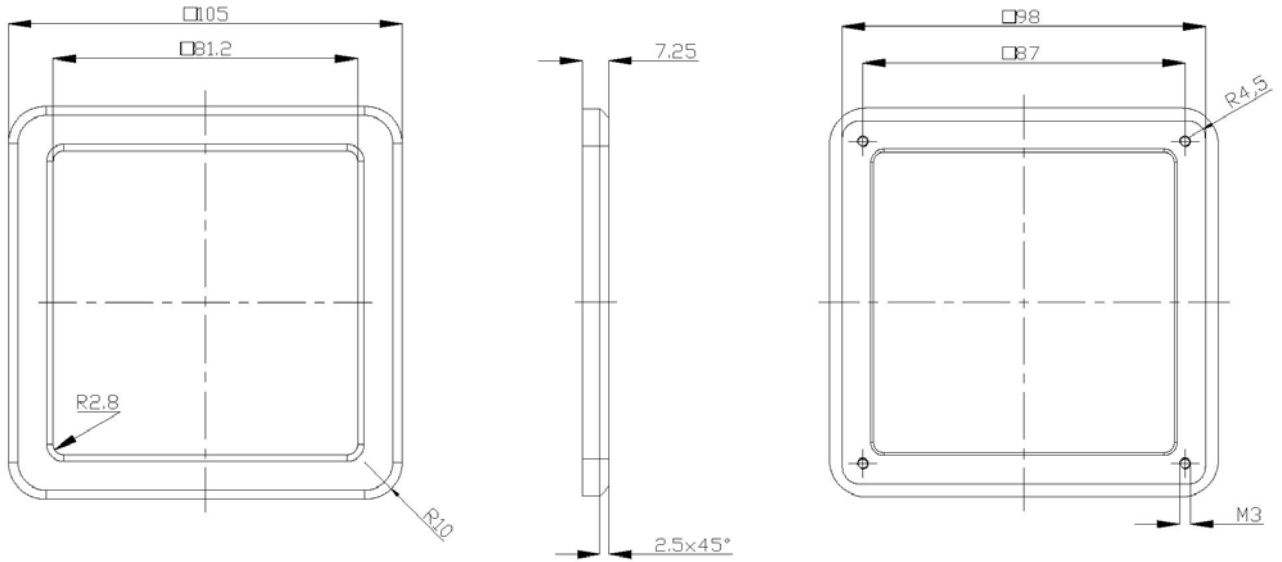
Legend

- *E = Inner part falls out after mounting*

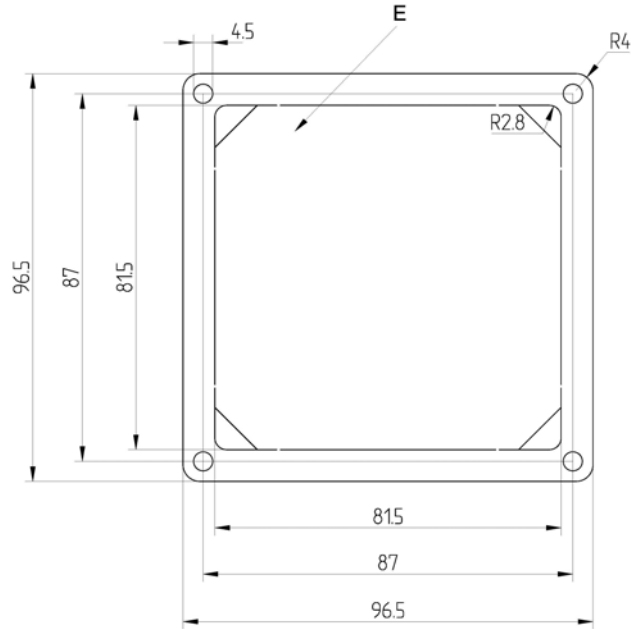
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Piezo Keypad 16 keys

Mounting Frame



Sealing



Legende

- E = Inner part falls out after mounting

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|---|-------------|-------------|-----------------|--------------|----------------|----------------|-------|
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5 PACKAGING

| | Packaging Unit | Type of Packaging |
|---|----------------|--------------------|
| Piezo keypad 12 keys with protective foil | 6 | Reusable packaging |
| Piezo keypad 16 keys with protective foil | 6 | Reusable packaging |

Note: Transport, storage and handling of piezo keypads should be in accordance with ESD guidelines.



6 QUALIFICATION TEST

6.1 Degree of Protection

| | |
|------------------------------------|--|
| IP Protection IEC/DIN/EN/ 60529 | Piezo Keypad: IP 69K Mounting to the housing: IP 68 * |
|------------------------------------|--|

* The accessory kit from SCHURTER enables the keypad to be sealed into the housing with the IP 68 protection class.

6.2 EMC Protection

| | |
|-------------------------------------|--|
| EMC test DIN EN 61000-4-3 (2000) | 4 kV contact discharge 8 kV air discharge |
|-------------------------------------|--|

| | | | | | | | |
|---|-------------|-------------|-----------------|--------------|----------------|----------------|-------|
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7 APPROVALS



CE compliant

8 ROHS COMPLIANT



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