

## Product manual

# Piezo Keypad

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## 1 PRODUCT DESCRIPTION



With the new piezo keypads SCHURTER provides input systems that are impervious to all kinds of dirt and fluids. The keypads are particularly suitable for use in outdoor applications due to their ability to resist extreme ambient conditions such as negative temperatures, ice and snow. The keypads fulfil the IP 69K protection class and have a reliable operating temperature from -25°C to +85°C. The mounting accessories from SCHURTER enable the keypad to be sealed into the housing with the IP 68 protection class. The piezo keypads can be mounted into the housing from the front or the rear.

As a standard, the 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. In addition, 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.

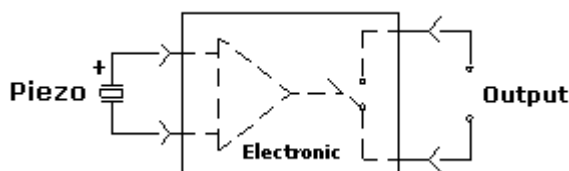
By using the piezo principle, the keypads are free of mechanical parts and therefore have an extremely long lifetime of more than 20 million actuations. The completely sealed operating panel is easy to clean and is resistant to common cleaning agents. The metal surface with an IK 05 impact strength renders the keypads highly resistant to impacts from outside. The piezo keypads have lower maintenance costs than other input systems while still providing a high level of functionality and reliability.

### 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.

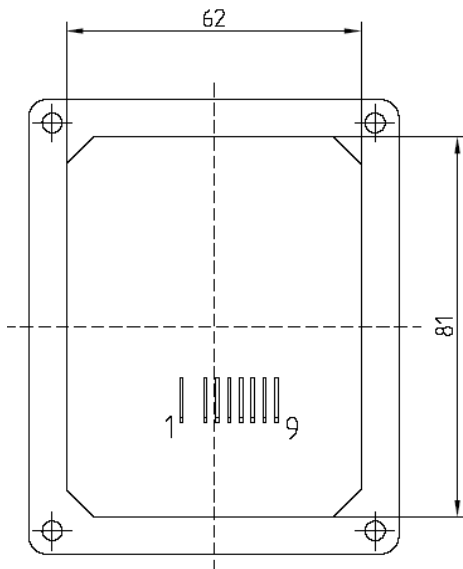
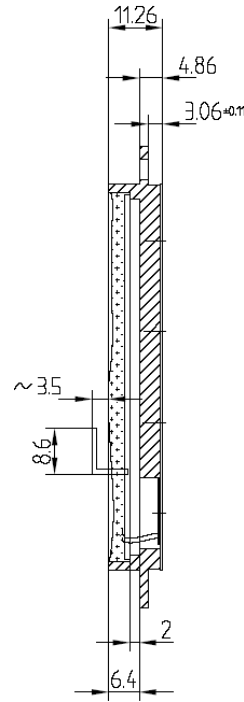
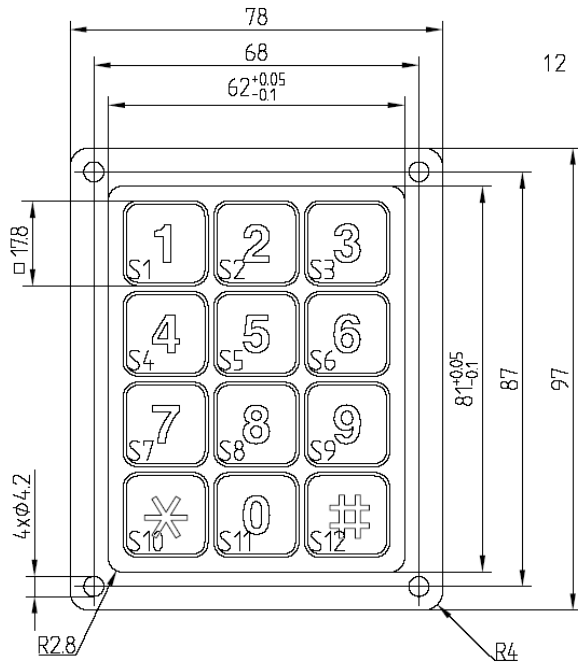
<u>Climatical Data</u>		
Operating Temperature	[°C]	-25 to +85
Storage Temperature	[°C]	-40 to +85
Degree of Protection *	[IP]	IP 69K

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

<b>Material</b>		
<b>Part</b>	<b>Material</b>	<b>UL-Listing</b>
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.



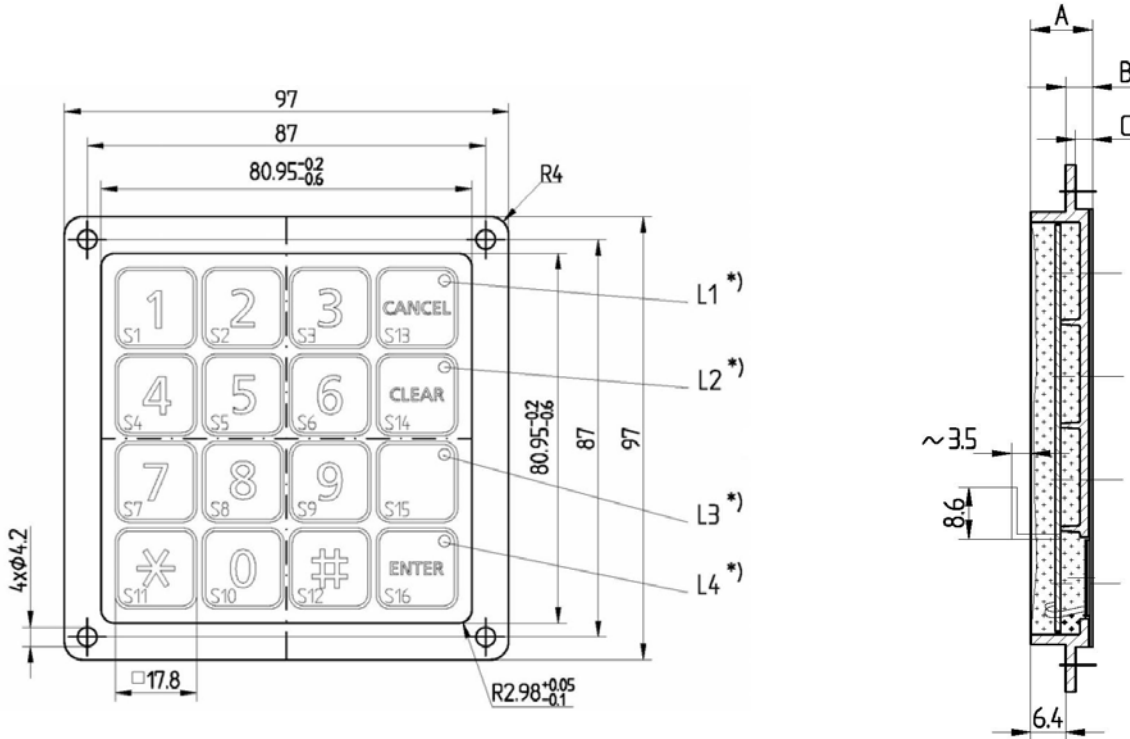
		PIN								
		1	2	3	4	5	6	7	8	9
Graphic	1	1		□		□				
	2	2		□			□			
	3	3		□				□		
	4	4		□					□	
	5	5		□						□
	6	6	□			□				
	7	7	□				□			
	8	8	□					□		
	9	9	□						□	
	10	*	□							□
	11	0			□	□				
	12	#	□							

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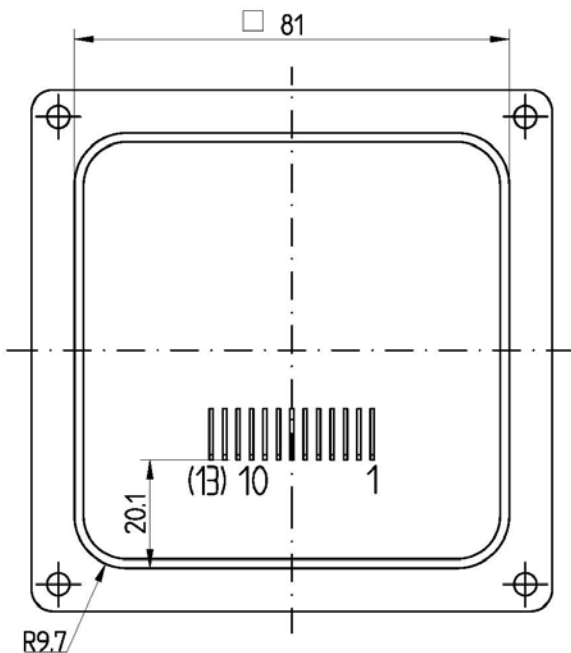
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### 2.3 Layout of 16 key keypad

Front-design can be varied.



Measures	A	B	C
Piezo Keypad 1068.1016.1110001	11.33	4.93	3.13 +/-0.11
Piezo Keypad 1068.1016.2110001	11.23	4.83	3.03 +/-0.11



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												
14	Clear													
15														
16	Ent													
LEDs	L1													
	L2													
	L3													
	L4													

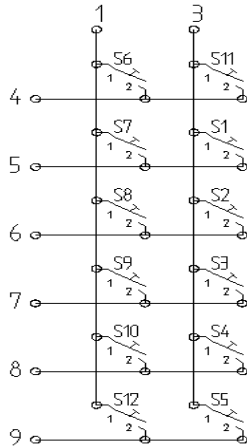
\* Common Supply LED Supply GND

\*) The standard color of the point illumination is green, other colors are available upon request.

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## 2.4 Circuit diagram

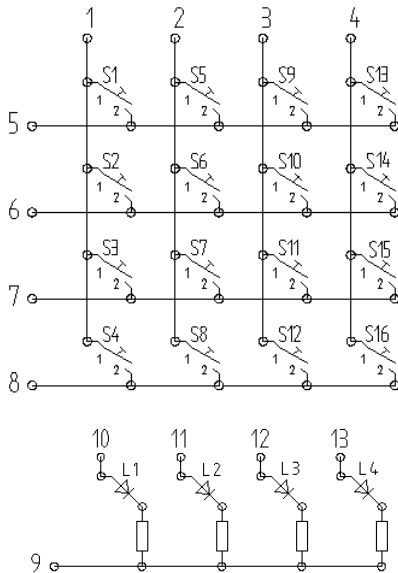
### 12 key keypad



Pin 2 n. c.

		PIN								
		1	2	3	4	5	6	7	8	9
Graphic	1	1		<input type="checkbox"/>		<input type="checkbox"/>				
	2	2		<input type="checkbox"/>			<input type="checkbox"/>			
	3	3			<input type="checkbox"/>				<input type="checkbox"/>	
	4	4			<input type="checkbox"/>					<input type="checkbox"/>
	5	5			<input type="checkbox"/>					<input type="checkbox"/>
	6	6	<input type="checkbox"/>			<input type="checkbox"/>				
	7	7	<input type="checkbox"/>				<input type="checkbox"/>			
	8	8	<input type="checkbox"/>					<input type="checkbox"/>		
	9	9	<input type="checkbox"/>						<input type="checkbox"/>	
	10	*	<input type="checkbox"/>							<input type="checkbox"/>
	11	0			<input type="checkbox"/>	<input type="checkbox"/>				
	12	#	<input type="checkbox"/>							<input type="checkbox"/>

### 16 key keypad



Pin 9 Led-Supply common GND

		PIN												
		1	2	3	4	5	6	7	8	9	10	11	12	13
Graphic	1	1	<input type="checkbox"/>			<input type="checkbox"/>								
	2	2	<input type="checkbox"/>				<input type="checkbox"/>							
	3	3	<input type="checkbox"/>					<input type="checkbox"/>						
	4	4	<input type="checkbox"/>						<input type="checkbox"/>					
	5	5		<input type="checkbox"/>			<input type="checkbox"/>							
	6	6	<input type="checkbox"/>				<input type="checkbox"/>							
	7	7	<input type="checkbox"/>					<input type="checkbox"/>						
	8	8	<input type="checkbox"/>						<input type="checkbox"/>					
	9	9		<input type="checkbox"/>			<input type="checkbox"/>							
	10	0	<input type="checkbox"/>				<input type="checkbox"/>							
	11	*		<input type="checkbox"/>				<input type="checkbox"/>						
	12	#		<input type="checkbox"/>					<input type="checkbox"/>					
	LEDs	13	Cancel			<input type="checkbox"/>	<input type="checkbox"/>							
14		Clear			<input type="checkbox"/>	<input type="checkbox"/>								
15					<input type="checkbox"/>		<input type="checkbox"/>							
16		Ent			<input type="checkbox"/>			<input type="checkbox"/>						
L1									<input type="checkbox"/>	<input type="checkbox"/>				
L2										<input type="checkbox"/>	<input type="checkbox"/>			
L3											<input type="checkbox"/>	<input type="checkbox"/>		
L4												<input type="checkbox"/>	<input type="checkbox"/>	

\* Common Supply LED Supply GND

### 3 ORDER NUMBERS

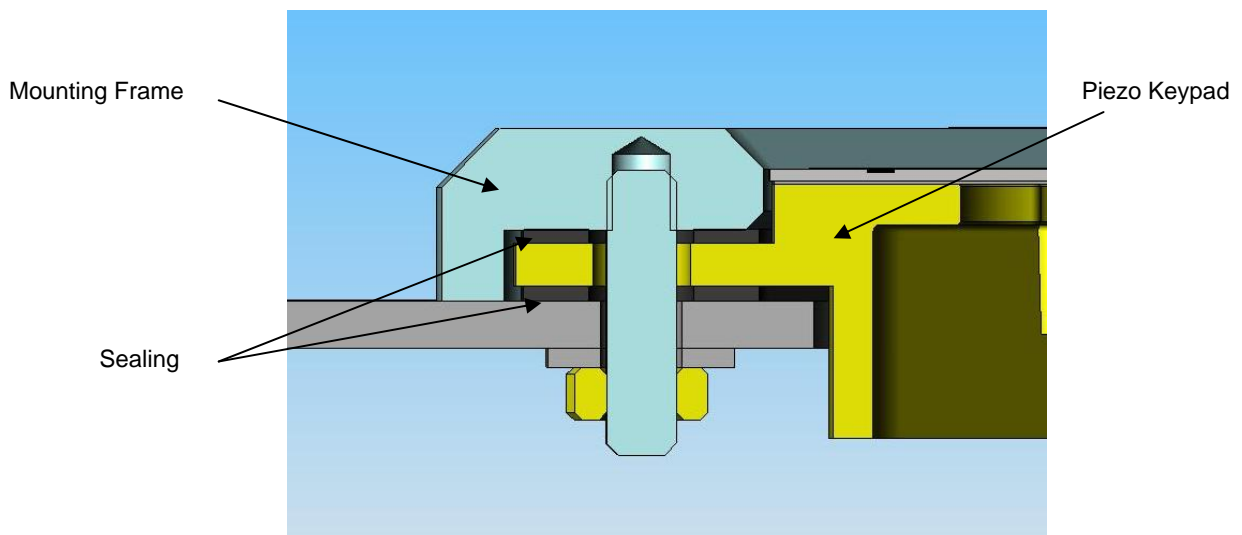
	piezo keypad 12 keys	piezo keypad 16 keys
front aluminum, multi pin connector, standard lettering*	1068.1012.1110001	1068.1016.1110001

\* 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

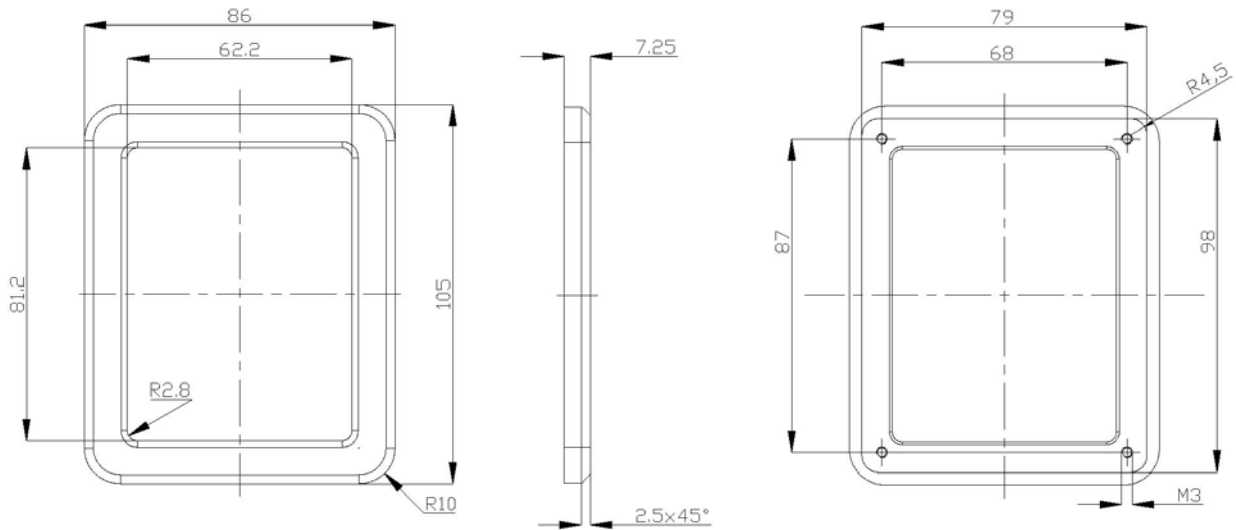




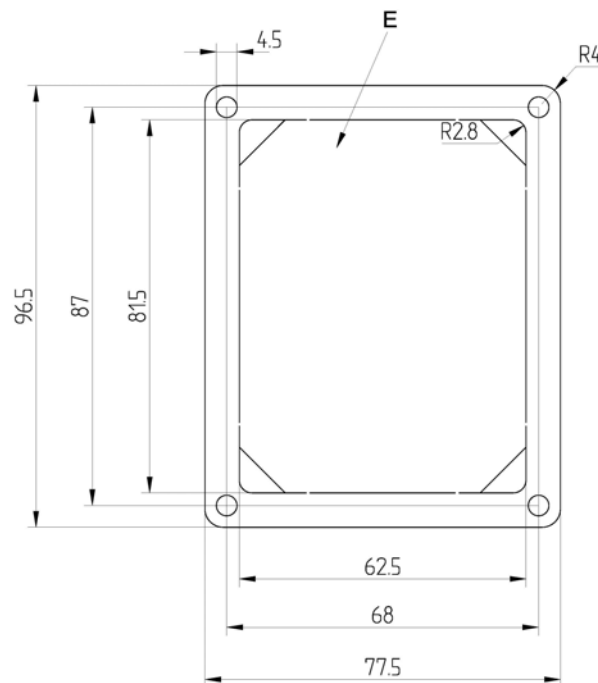
## 4.2 Dimensions Accessory Kit

### Piezo Keypad 12 keys

#### Mounting Frame



#### Sealing



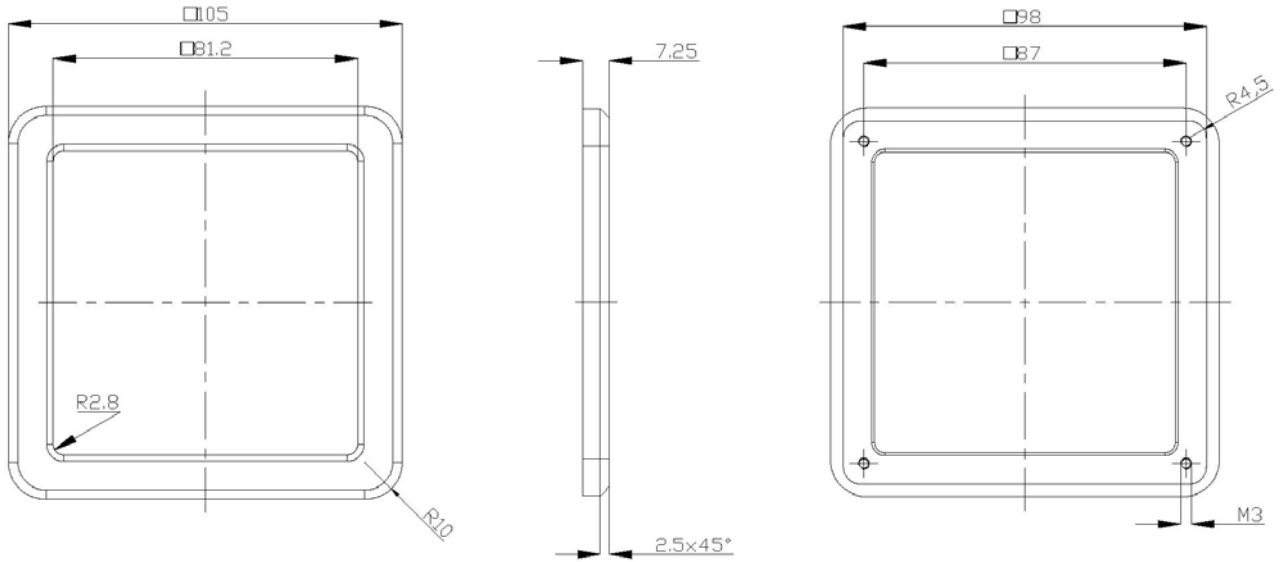
#### **Legend**

- *E = Inner part falls out after mounting*

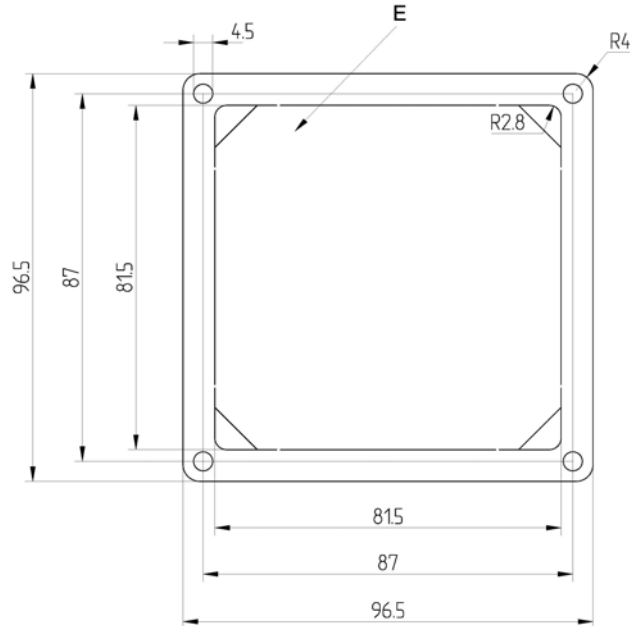
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Piezo Keypad 16 keys

Mounting Frame



Sealing



**Legende**

- *E = Inner part falls out after mounting*

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## 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 *
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\* 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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