



## Tactile effect

A tactile effect allows the user to clearly feel the key activation. We produce keypads with three types of tactile effects:

- flat keys (no tactile effect) provide the easiest and quiet key activation.
- keys with molding offer a good tactile effect at a low cost and smooth key pressing. A key can be molded as a circle, rectangle, triangle, ellipse.
- metal domes provide a tactile effect that is felt even through thick gloves and produce a clear clicking sound when pressed. Another advantage of metallic membranes is their low contact resistance. We recommend this version for use in special machinery.

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## Technical characteristics

Basic characteristics of keypads with different types of tactile effect are described in the table below.

Parameter	No tactile effect	Keys with molding	Metallic membranes
Key pressing force, g	150-200	250-500	250-600
Key stroke, mm	0,2	0,5-0,8	0,5-1,0
Number of key activations, mln	1,5	1,0	1,0
Contact resistance, Ohm	10-40	10-40	<10 (<0,1*)

\* membranes with gilding

### Flat keys (no tactile effect)

No tactile effect is felt when a key is being pressed. The small key stroke provides high reliability and durability. We recommend using another type of key pressing indication (e.g. with a sound signal).

### Keys with molding

Tactile effect is created by the polyester film elasticity. The usual key shape is round. The standard diameter is from 9 to 15 mm (if the diameter is reduced, the keystroke becomes harder). We recommend the molding size of 10-12 mm. Molding can also have an irregular shape according to the key type (rectangular, triangular, elliptical).

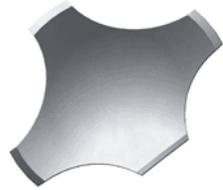
Key pressing the relatively soft, smooth.

### Metal domes

Keypads with metal domes offer clearly perceived tactile effect with a click when a key pressed. Key pressing is felt even through thick gloves. Such metal domes provide lower contact resistance of the keys. Metal domes are, in many cases, the best option for special machinery products.

There are several types of metal domes. The table below offers a comparative description of the characteristics of different metal domes types.

**Table 2: Characteristics of different types of metal domes**

Membrane type	Application	Type, dimensions, mm	Pressing force, g	Appearance
Four-legged	The most common membranes; used for round and square keys	6, 8, 10, 12, 16 и 20 (standard: 12)	170, 280, 350, 400	
Triangular	For triangle or very small keys	6, 7, 8, 9, 10, 12	150, 240, 280, 350, 400, 550	
Rectangular	For rectangular keys	8.89x17.78 12.7x25.4 12.7x38.1	150, 280, 350	
Dual-contact membranes	Dual pressing: at first, one circuit gets closed, then, if stronger pressing is applied, the other one does	6, 8.5, 10, 12	180, 340, 400 (full pressing force)	
Membranes with an opening	Allow placing a LED in the middle of a key	10, 12, 14	280, 400, 660	

When metal domes are used, certain features must be taken into account:

- 1) Metal domes are opaque. If backlight is required, use Active key illumination technology (see on our website).
- 2) The base on which the keypad will be mounted has to be rigid enough, so that it will not amortize the pressing force, thus lowering the tactile effect.