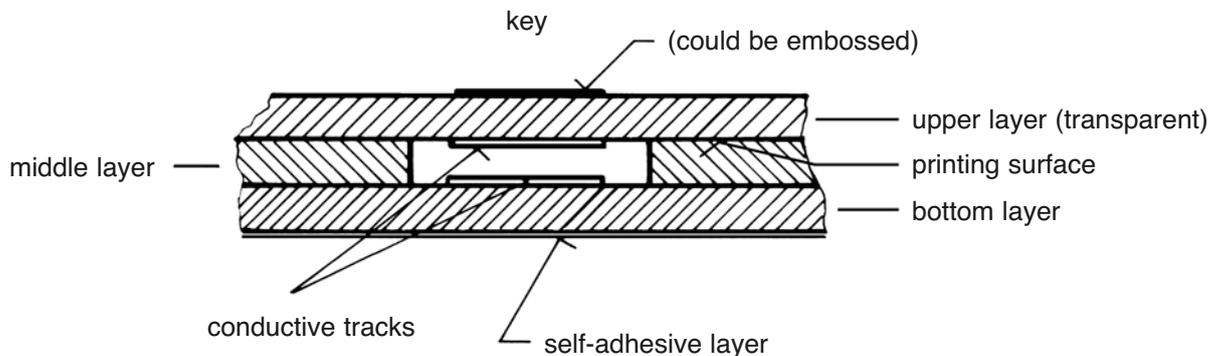


## General description of membrane switches

Membrane switches are keypads with an integrated (mainly flexible) PCB. In principle, they consist of three layers. The upper, transparent layer, which faces the viewer, has the printing on the bottom side according to customer's design. This results in a high protection. The keys themselves can be embossed to achieve a good tactile feeling. The bottom side of the keys will be conductive. The middle layer allows distance between the upper and lower layer. Open areas of the middle layer allow a switching process by pressing the key. The tracks on the surface of the lower layer lead to the connector. On request we can supply the finished keyboard ready for assembly. For easy mounting the rear-side is usually self-adhesive.

## Construction



## General features

- high reliability at a long lifetime
- flexible design (size, colors, printing, embossing)
- flat and flexible
- compact construction with integrated functions (e.g. LEDs)
- easy to connect
- applicable wherever data have to be entered manually

## Electrical and physical parameters\*

	Parameter	Data
Electrical data	contact resistance	100 Ohm or less
	insulation resistance	100 MOhm or more at 100 V DC
	operating voltage	< 24 V
	max. current	10 mA
	min. current	50 $\mu$ A
	max. power	1 W
	bouncing	15 ms or less
Mechanical data	operating force	1 - 5 N
	stroke	ca. 0,2 - 0,7 mm
	lifetime	> 1.000.000 operations
	protection level	IP65
	operating temperature	-20°C to +70°C / 50-80% RH
	storage temperature	-40°C to +80°C / 10-85% RH

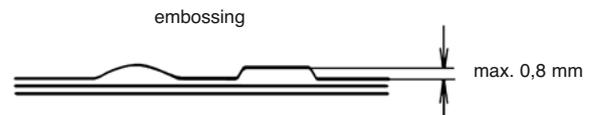
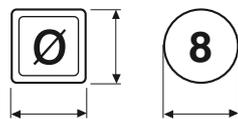
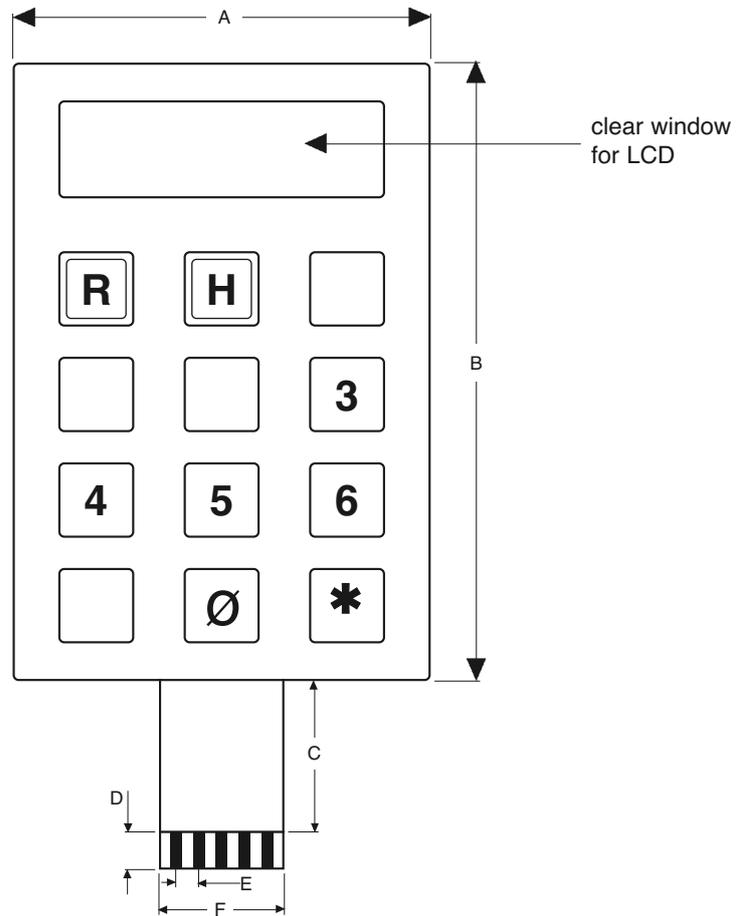
\* depending on construction

## Typical characteristics of plastics

Characteristics	Polycarbonate PC	Polyester PETP
Mechanical	Tear strength: good Resistance against scratches: very good	Tear strength: very good Resistance against scratches: good
Electrical	Breakdown voltage: $\varnothing$ 60 kV/mm Insulation resistance: $10^9 - 10^{11} \Omega$	Breakdown voltage: $\varnothing$ 250 kV/mm Insulation resistance: $10^9 - 10^{11} \Omega$
Thermal	Temperature range: -50°C to +120°C Melting point: 220°C Inflammability: slow to self extinguishing	Temperature range: -70°C to +150°C Melting point: 250°C Inflammability: slow to self extinguishing
Optical	Good light permeability, well suitable for LED-displays. The colors look slightly dimmed.	Very good light permeability, well suitable for LED- and LCD-displays. The colors look bright.
Chemical	Polycarbonate is resistant against mineral acids, many organic acids, oxidation and reducing agents, neutral and sour salt solvents, oils, saturated aliphatic and cyclo-aliphatic hydrocarbons and alcohols, except methanol.	Polyester foil is to a considerable degree resistant against humidity and most chemicals. Polyester is resistant to detergents, water, gasoline, oil, alcohol, vinegar, aliphatic hydrocarbons, bleaching solvents, two percent iron perchloride solvents, iodine, ethyl acetate, food coloring materials and machine oil. It is less resistant to chlorinated hydrocarbons, Ketone and aromatic hydrocarbons.

**NEW:** Keyboards made of PU and with epoxy-keys.

**Customized design**



Company \_\_\_\_\_

Street \_\_\_\_\_

Postal code/City \_\_\_\_\_

Telephone \_\_\_\_\_

Fax \_\_\_\_\_

E-mail \_\_\_\_\_

Contact person \_\_\_\_\_

operating voltage \_\_\_\_\_ V

switching power \_\_\_\_\_ mA

stroke \_\_\_\_\_ (typ 0,35 mm)

actuation force \_\_\_\_\_ g

basic colour \_\_\_\_\_ (RAL, reference sample)

print/keys \_\_\_\_\_

prototypes \_\_\_\_\_ pcs

series \_\_\_\_\_ pcs/year