Technical specifications

Electrical characteristics	**Module ML**	**Module MX**
Switching voltage	12 V AC/DC max.	12 V AC/DC max.
Switching current	10 mA AC/DC max.	10 mA AC/DC max.
Dielectric strength	500 V/50 Hz	500 V/50 Hz
Durability at 5V, 1mA linear actuation	–	50×10^6
Durability at 5V, 1mA tactile feel click	20×10^6	50×10^6
Durability at 5V, 1mA alternate action	–	$0{,}5 \times 10^6$
Durability at 5V, 1mA alternate action		50×10^6
Mechanical characteristics		
Contact configuration	Single-pole contact	Single-pole contact
Action	Pressure point click	Linear, pressure point click, alternate action, ergonomic
Actuator travel	3,0–0,5 mm	4,0–0,4 mm Impuls/4,2 0,3 mm Rast/4–0,5 mm click
Pretravel	1,5 ± 0,5 mm	2 ± 0,6 mm Impuls/1,4 0,4 mm Rast/2,2 0,6 mm click
Initial force	30 cN min	25 cN min.
Actuation force	45 ± 20 cN	60 ± 20 cN linear a. Rast; 45 20 cN, ergonom. and 50 15 cN click
Pressure point force	50 ± 20 cN	55 ± 20 cN, pressure point ergonomic/60 15 cN pressure point click
Bounce time during actuation with 0,4 m/s	≤5 ms	≤5 ms
Standard lead spacing	18 mm (16 mm min.)	19,05 mm (16 mm min.)
Fastening	Fixing pins in the printed circuit board	Snap fastening in frame or fixing pins in the printed circuit board
Lighting (optional)	–	LED in red, green or yellow
Decoupling diode	–	optional
Wire jumper	optional	optional
Materials		
Insulation materials	Thermoplastics (min.UL 94 HB)	Thermoplastics (min.UL 94 HB)
Spring	Stainless steel	Stainless steel
Contacts	High-quality gold alloy	High-quality gold alloy
Other Characteristics		
Protection class	IP 40	IP 40
Operating temperature	–10 °C to +70 °C	–10 °C to +70 °C
Storage temperature	–40 °C to +70 °C	–40 °C to +70 °C
Humidity (without condensation)	5 % to 95 %	5 % to 95 %
Soldering capability	see soldering specifications	see soldering specifications

For detailed information and the layout of the details described above, please do not hesitate to ask for our technical specifi cations and drawing.

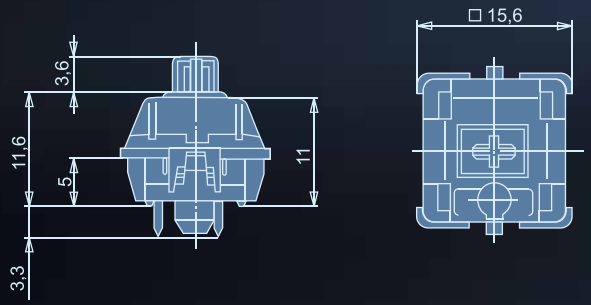
Keymodule MX

Features

The constructive design of the key and the design of the associated key-caps fulfil the ergonomic requirements for data input workstations. Long operating life with gold crosspoint contact and high reliability with quick actuation. Optionally with integrated colour LED decoupling diode or wire bridge. 4 mm actuation travel.

Size of keycap	1 x 2 1 x 2,25 1 x 2,75	1 x 3	1 x 8
Type of keycap	8 mm/Cyln	8 mm/Cyln	8 mm/Cyln
„A“ (in mm)	23,8	38,1	133,35
Part-No. (without Pins)	G99-0224	G99-0225	G99-0226
Part-No. (with Pins)	G99-0742	G99-0743	G99-0744

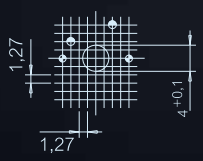
View of keymodule



Keyswitch assembly

Drilling patterns

with fixing pins

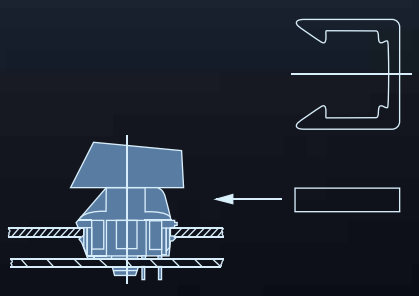


with fixing pins and LED

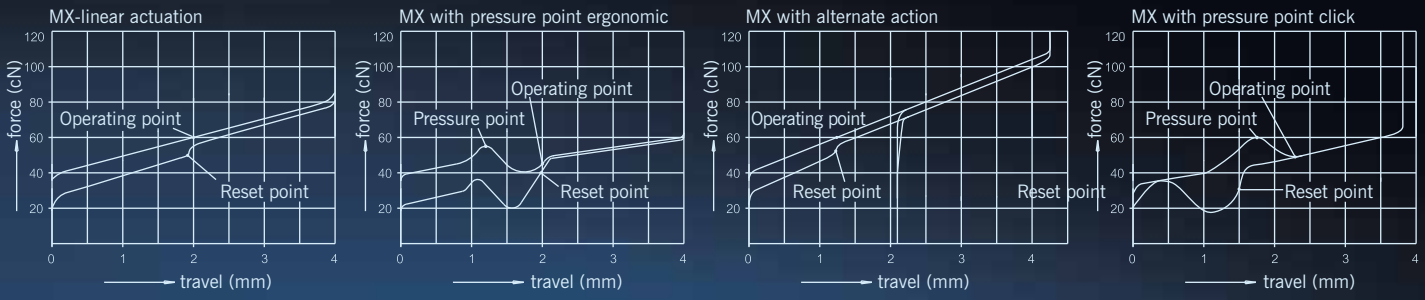
with fixing pins and diode or wire bridge

- ø 1,7 - 0,05
- ø 1,5 ± 0,05
- ø 1,0 + 0,1

Locking unit

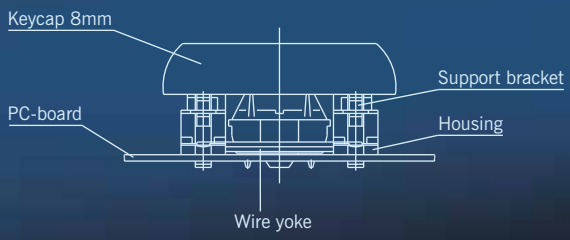


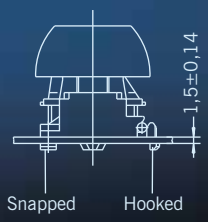
Force/travel diagram



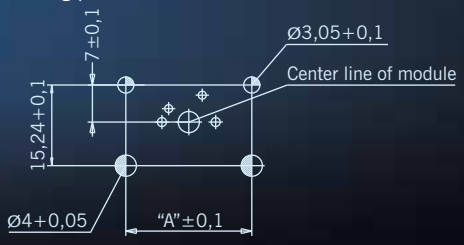
Multiple key mechanical

without frame

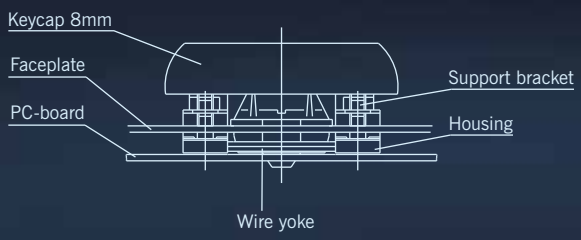




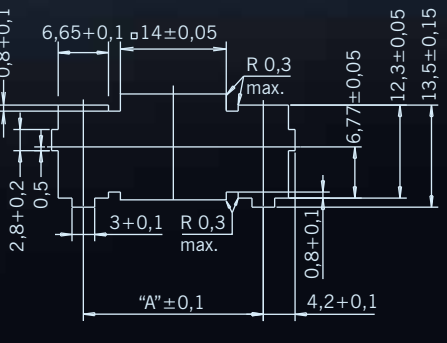
Drilling pattern



with frame



Cutout of frame for keycaps sizes
1x2, 1x2,25, 1x2,75



Cutout of frame for keycaps sizes
1x3, 1x7, 1x8, 1x9, 1x10