

The robust spring-return joystick switches and maintained joystick switches



SCHMERSAL
Safe solutions for your industry

Range K

The command devices for



■ Multifunctional:

- Spring-return joystick switch, reset by spring force
- Maintained joystick switch, reset by touch and spring force
- Maintained/spring-return joystick switch, combination of maintaining and relocating the lever's position, i.e. acting as maintained joystick switch in one direction and as spring-return joystick switch in the other

■ Trendsetting:

- Up to four actuating directions

■ Unique:

- The actuating heads of the MK... series can be mounted in up to 6 mm front plates
- The actuating heads of the WK... series can be mounted in up to 10 mm front plates for the highest environmental strains

■ Individually:

- Large selection of contact variants
- Up to eight galvanically separated contacts

rough and harsh environmental conditions

■ Environmental compatibility:

The high protection classes IP65 / IP67 / IP69K enable a safe operation, even under harsh and rough environmental conditions

■ Robust:

The WKT-26 series features special thick-walled bellows to make it suitable for outdoor usage. When the pushbuttons and switches are exposed to high UV-radiation, the use of the versions with silicone bellows is recommended.

■ Large range of application:

The K series can be used at ambient temperatures of up to $-40\text{ }^{\circ}\text{C}$ and $+80\text{ }^{\circ}\text{C}$, depending on the version.

■ Safe:

All devices are available with an additional mechanical lock with a holding force of up to 200 N as a protection against accidental shifts out of the home position.





Applications of spring-return joystick switches / maintained joystick switches



The spring-return joystick switches and maintained joystick switches of the MK/WK range are extremely robust, compact, versatile and functional. They are optimally fit for use on machinery and plants in the food-processing industry and process technology.

They furthermore are suitable for especially rough industrial applications, including outdoor usage. Compared to multifunctional command systems, such as used on control unit for cranes and automated guided vehicles (AGV), they require considerably less installation space.

Fields of application

- Food-processing machinery
- Process technology plants
- Hydraulic platforms and tail lifts on utility vehicles
- Aerial work platforms
- Airport service and apron vehicles
- Aircraft tractors
- Handling and assembly technology



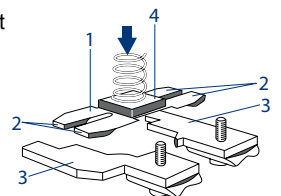


Reliable contact system



The contact system of the spring-return joystick switches and maintained joystick switches operates according to the so-called four-way contact principle. This means that the contacts are double breaking (1) and have four contact points (2) each, which operate in parallel (as twin contacts) and moreover diagonal (as H bridge).

In this way, a very high contact factor is created, which - in conjunction with a high specific contact pressure - guarantees a perfect and extremely reliable contact, even in unfavourable circumstances. During the switching procedure, the micro-movements of the spring contact bridges onto the fixed contact (3) have a self-cleaning effect. The contacts therefore are particularly suitable to switch low-voltage circuits. In order to obtain an optimal corrosion protection, all contact elements are additionally gold-plated. The switching contacts are galvanically separated from each other (4), i.e. the contact elements can also be used in electric circuits with different voltages.



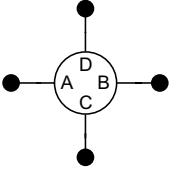
Outdoor applications

When the spring-return or maintained joystick switches are used in very low temperatures, i.e. up to -40°C , the device plungers both in the actuating heads and in the contact elements are additionally greased with a special grease. This additional measure prevents the condensation water from freezing (which would result in a blocked actuating plunger) when the devices are exposed to near freezing point temperatures.

In addition to that, variants with IP 69K protection class are available. This protection class, which was originally developed for road vehicles, means that the spring-return and maintained joystick switches can be cleaned with high-pressure cleaners without loss of function.



1st step: Selection of the device design

Switching position	Contact variants				Spring-return joystick switch		
	Position	Position	Position	Position	Range MKT Mounting diameter 22.3 mm		Range
	A	B	C	D	without locking sleeve	with locking sleeve	without locking sleeve
	1 NO	1 NO			MKTA32	MKTA321	WKTA32
	1 NC	1 NC			MKTA32/401	MKTA321/401	WKTA32/401
	2 NO	2 NO			MKTB32	MKTB321	WKTB32
	1 NC/1 NO	1 NC/1 NO			MKTB32/1x401	MKTB321/1x401	WKTB32/1x401
	2 NO	2 NO			MKTC32	MKTC321	WKTC32
	1 NO	1 NO	1 NO		MKTC42	MKTC421	WKTC42
	1 NO	1 NO	1 NO	1 NO	MKTC52	MKTC521	WKTC52
	1 NC	1 NC	1 NC	1 NC	MKTC52/2x401	MKTC521/2x401	WKTC52/2x401
	4 NO	4 NO			MKTE32	MKTE321	WKTE32
	4 NC	4 NO			MKTE32/404	MKTE321/404	WKTE32/404
	4 NC	4 NC			MKTE32/800	MKTE321/800	WKTE32/800
	2 NO	2 NO	2 NO	2 NO	MKTE52	MKTE521	WKTE52
	1 NC/1 NO	1 NC/1 NO	2 NO	2 NO	MKTE52/206	MKTE521/206	WKTE52/206
	2 NC	2 NO	2 NO	2 NO	MKTE52/206.1	MKTE521/206.1	WKTE52/206.1
	1 NC/1 NO	1 NC/1 NO	1 NC/1 NO	1 NC/1 NO	MKTE52/2x401	MKTE521/2x401	WKTE52/2x401

2nd step: Selection of the bellows

Optional bellows	Included in standard version	/WKT-19.4	/WKT-19.3	/WKT-26
Description	Bellows rubber	Bellows rubber, suitable for outdoor usage	Silicone bellows, UV-resistant up to -40°C	Silicone bellows, UV-resistant up to -40°C thick-walled / tear-proof IP69K
Material thickness	approx. 1 mm		approx. 2 mm	
Material features	tear-proof		partly tear-proof	tear-proof
Protection class (frontside)	IP65 / IP67		IP67 / IP69K	
Ambient temperature	-25 ... +80 °C		-40 ... +80 °C	
Mechanical life	1 × 10 ⁶ operations	0.5 × 10 ⁶ operations	0.3 × 10 ⁶ operations	0.5 × 10 ⁶ operations
Notes				Only usable in combination with spring-return joystick switches without locking sleeve
Material resistance	Rubber		Silicone	
- UV/ozone	not suitable	suitable	particularly suitable	
- Outdoor usage	not suitable	suitable	particularly suitable	
- Fuel, oil	partly suitable		not suitable	
- Solvents	partly suitable		partly suitable	
- Acids	partly suitable		not suitable	
- Chemicals	not suitable		partly suitable	
- Foodstuff	not suitable		physiologically harmless	

Optional bellows

To order, the order code of the bellows is added to the order code of the switch.

e WKT meter 30.5 mm	Maintained joystick switch				Maintained/spring-return joystick switch	
	Range MKS Mounting diameter 22.3 mm		Range WKS Mounting diameter 30.5 mm		Mounting diameter 30.5 mm	
	without locking sleeve	with locking sleeve	without locking sleeve	with locking sleeve	without locking sleeve	with locking sleeve
WKTA321	MKSA32	MKSA321	WKSA32	WKSA321	WKTSA32 ¹⁾	WKTSA321 ¹⁾
WKTA321/401	MKSA32/401	MKSA321/401	WKSA32/401	WKSA321/401		
WKTB321	MKSB32	MKSB321	WKSB32	WKSB321		
WKTB321/1x401	MKSB32/1x401	MKSB321/1x401	WKSB32/1x401	WKSB321/1x401		
WKTC321	MKSC32	MKSC321	WKSC32	WKSC321		
WKTC421	MKSC42	MKSC421	WKSC42	WKSC421		
WKTC521	MKSC52	MKSC521	WKSC52	WKSC521	WKTSC52 ²⁾	WKTSC521 ²⁾
WKTC521/2x401	MKSC52/2x401	MKSC521/2x401	WKSC52/2x401	WKSC521/2x401		
WKTE321	MKSE32	MKSE321	WKSE32	WKSE321		
WKTE321/404	MKSE32/404	MKSE321/404	WKSE32/404	WKSE321/404		
WKTE321/800	MKSE32/800	MKSE321/800	WKSE32/800	WKSE321/800		
WKTE521	MKSE52	MKSE521	WKSE52	WKSE521		
WKTE521/206	MKSE52/206	MKSE521/206	WKSE52/206	WKSE521/206		
WKTE521/206.1	MKSE52/206.1	MKSE521/206.1	WKSE52/206.1	WKSE521/206.1		
WKTE521/2x401	MKSE52/2x401	MKSE521/2x401	WKSE52/2x401	WKSE521/2x401		

¹⁾ Position A spring-return (touch position) and Position B maintained (latched position)

²⁾ Position C/D spring-return (touch position) and Position A/B maintained (latched position)

3rd step: your product

Ordering example	Type designation
- Mounting diameter 22.3 mm	M
- Spring-return joystick switch	KT
- Contacts 4 NO contacts Position A 4 NO contacts Position B	E32
- With locking sleeve	1
- Bellows suitable for outdoor usage	/WKT-19.4
	MKTE321/WKT-19.4

Device heads with the different bellows

The actuating head and the contact elements are supplied as a complete device. The protection class of the actuating heads is IP65 and IP 67 to EN 60529.

Some devices versions (= versions with thick-walled silicone bellows) moreover meet the IP69K protection class requirements to EDIN 40050 Part 9.

Upon request, we supply hygiene-compliant versions for use in the food-processing industry, pharmaceuticals and for use within clean room technologies.



Devices for mounting hole 22.3 mm

Range MK...	2 contacts	4 contacts	4 contacts	8 contacts	
without locking sleeve		MKTA32...	MKTB32...	MKTC32...	MKTE32...
		MKSA32...	MKSB32...	MKSC32...	MKSE32...
				MKTC42...	MKTE52...
				MKSC42...	MKSE52...
				MKTC52...	
			MKSC52...		
with locking sleeve		MKTA321...	MKTB321...	MKTC321...	MKTE321...
		MKSA321...	MKSB321...	MKSC321...	MKSE321...
				MKTC421...	MKTE521...
				MKSC421...	MKSE521...
				MKTC521...	
			MKSC521...		

MP = Mounting plate (series MK... thickness max. 6 mm)

Devices for mounting hole 30.5 mm

Range WK...	2 contacts	4 contacts	4 contacts	8 contacts	
without locking sleeve		WKTA32...	WKTB32...	WKTC32...	WKTE32...
		WKSA32...	WKS32...	WKSC32...	WKSE32...
		WKTA32...		WKTC42...	WKTE52...
				WKSC42...	WKSE52...
				WKTC52...	
			WKSC52...		
			WKTSC52...		
with locking sleeve		WKTA321...	WKTB321...	WKTC321...	WKTE321...
		WKSA321...	WKS321...	WKSC321...	WKSE321...
		WKTA321...		WKTC421...	WKTE521...
				WKSC421...	WKSE521...
				WKTC521...	
			WKSC521...		
			WKTSC521...		

MP = Mounting plate (series WK... thickness max. 10 mm)

Technical data

Features	Range MK...	Range WK...
Mounting diameter to IEC/EN 60947-1	22.3 mm + 0.4 mm	30.5 mm + 0.5 mm
Front plate thickness	1.5 ... 6 mm	1.5 ... 10 mm
Spacing	80 × 80 mm	
Connection:	Lock nut	mounting flange
Temperature range	-25 °C ... +80 °C with NBR bellows, -40 °C ... +80 °C with silicone bellows	
Protection class	IP65 / IP67 to EN 60529, IP69K to DIN 40050 part 9 (Depending on the version)	
Galvanically separated contact bridges	Yes	
Front ring execution	Al anodised	
Actuating force	approx. 11 N	
Rated insulation voltage U_i	440 V, Degree of pollution 3 to IEC 60947-1	
Rated operating current I_e	AC-15: 250 VAC/8 A; DC-13: 24 VDC/5 A (depending on the utilisation category and the test voltage)	
Thermal nominal current I_{th} (in air)	10 A	
Switching frequency	1,200 s/h	
Climate resistance	to IEC EN 60068 part 2-20	
Mounting position	any	
Resistance to shock	110 g/4 ms – 30 g/18 ms, no bouncing	
Resistance to vibrations	> 20 g/10 ... 200 Hz	
Standards (for as far as applicable)	IEC/EN 60947-5-1, IEC 60947-1	

Operating principle



Maintained joystick switch
Maintained switching positions
(latched position)
Reset by touch and spring force



Spring-return joystick switch
Spring-return switching position
(touch position)
Reset by spring force



Maintained/spring-return joystick switch
Maintained and spring-return switching
positions
Reset by touch and spring force

Protection against unintentional actuation

All devices are available with an additional mechanical lock as a protection against accidental shifts out of the home position. The holding force of the lock is approx. 100 N for devices with an installation diameter of 22.3 mm and approx. 200 N for devices with an installation diameter of 30.5 mm.





The Schmersal Group

For many years the privately owned Schmersal Group has been developing and manufacturing products to enhance occupational safety. What started out with the development and manufacture of a very wide variety of mechanical and non-contact switchgear has now become the world's largest range of safety systems and solutions for the protection of man and machine. Over 1,200 employees in more than 50 countries around the world are developing safety technology solutions in close cooperation with our customers, thus contributing to a safer world.

Motivated by the vision of a safe working environment, the Schmersal Group's engineers are constantly working on the development of new devices and systems for every imaginable application and requirement of the different industries. New safety concepts require new solutions and it is necessary to integrate new detection principles and to discover new paths for the transmission and evaluation of the information provided by these principles. Furthermore, the set of ever more complex standards, regulations and directives relating to machinery safety also requires a change in thinking from the manufacturers and users of machines.

These are the challenges which the Schmersal Group, in partnership with machinery manufacturers, is tackling and will continue to tackle in the future.

Product ranges



Safe switching and monitoring

- Guard door monitoring safety switches
- Command devices with safety function
- Tactile safety devices
- Optoelectronic safety devices

Safe signal processing

- Safety monitoring modules
- Safety controllers
- Safety bus systems

Automation

- Position detection
- Command and signalling devices

Industries



- Elevators and escalators
- Packaging
- Food
- Machine tools
- Wood working

Services



- Application advice
- CE conformity assessment
- Risk assessment in accordance with the Machinery Directive
- Stop time measurements
- Training courses

Competences



- Machine safety
- Automation
- Explosion protection
- Hygienic design

All data mentioned in this flyer have been carefully checked.
Technical modifications and errors excepted.

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