



The data used in this Product Overview may be used as a guideline only.
Specific operational characteristics of our products may vary according to individual applications. It is strongly recommended that specific operating conditions are clarified with Johnson Electric before application.

Johnson Electric Terms and Conditions of Sale apply.

All data may be subject to change without notice.



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OVERVIEW

The Johnson Electric Group is one of the world's largest providers of motion actuators for automotive and industrial applications

Over the years, we have shipped billions of motors to more than thirty countries in over one hundred different motor applications. Johnson Electric has an annual production capacity of one billion motors.

to meet all of our commitments and to support our customers' success. Product reliability and assurance of supply are our commitment.

At the heart of Johnson Electric's success is our commitment to make our customers successful. Our customers include many of the world's leading industrial, consumer and automotive companies. We begin by understanding our customers' business needs, and the product application requirements of the end user of our customers' products. Then we design and deliver innovative motion solutions that help our customers to differentiate their products in the marketplace. Our goal is to be instrumental in the successful launch of our customers' products in their respective marketplaces.

Our Brand Promise

Johnson Electric is the most reliable partner

Johnson Electric is responsive and flexible; and has the financial stability and organizational integrity

Johnson Electric delivers competitive advantage

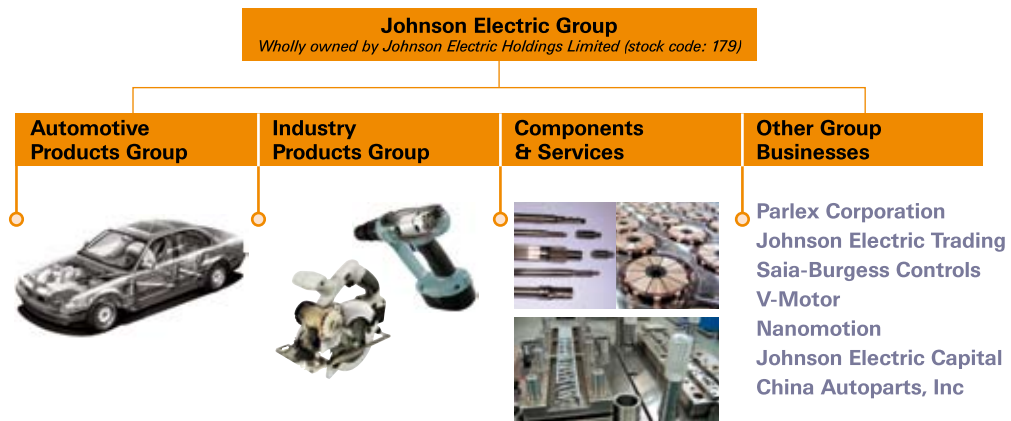
Johnson Electric delivers differentiation and innovation through its motion products – subsystems comprising of Stepper Motors, DC Motors, AC Motors, Piezo-electric Motors, Switches, Solenoids, Flexi Circuits, Motion Control, Precision Plastics and Precision Gears.

Our business growth hinges with leading “branded” goods producers to deliver differentiation and innovation through our motion products. The core platform for delivering these solutions is a highly developed production base and focused customer support teams throughout the world. This combines scale advantages in production and procurement with skilled and dedicated motion application experts.



HOW WE ARE ORGANIZED

Johnson Electric Holdings Limited is the parent company of the Johnson Electric Group and has been listed on the Stock Exchange of Hong Kong since 1984. The Group structure consists of a number of operating divisions and business units focused on their particular customer application or product segment



The Group's motion systems, motors and switches businesses are managed through two primary operating divisions: Automotive Products Group and Industry Products Group.

The Automotive Products Group, which consists of Johnson Electric's Automotive Motors Group and the Automotive Division of Saia-Burgess Electronics, is focused on providing customized motion solutions for major automotive application segments that include powertrain, body and chassis.

The Industry Products Group is comprised of business units that provide motion products and solutions for various commercial and industrial application sectors, including home appliances, power tools, business equipment, personal care products, medical equipment and healthcare, building automation and security, audio-visual and other industrial products.

Supporting these two operating divisions is the Group's Components & Services function which produces metal and plastic parts, tooling and production equipment for motor and motion related products. Johnson Electric is a highly vertically integrated business that manufactures an exceptionally wide range of components that form the basis for its final assembled end products. We make magnets, bearings, shafts, housings, laminations, commutators and die cast parts. We also build tools, assembly fixtures, plastic molds as well as armature winding and other production machines.

In addition to motion systems and motors, the Group also consists of a number of complementary manufacturing businesses and other subsidiary companies. These include an innovative provider of flexible printed circuits and interconnect solutions; a successful niche player in the programmable controls industry; and a rapidly growing specialty metals and trading services company.

Looking for a specialized switching solution?

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Look no further.

In addition to the wide range of standard products shown in this catalog, we will be happy to work with you to meet your switching needs. If your application requires more than a standard product solution, please consider us early in your design process. Our product development team will be happy to discuss your specification, whether you need a special switch design or a complete value-added assembly.

The images shown give some examples of our capabilities.



TH-Contact is a leading brand for panel mounted switches

Flexibility is the key. Our switches give you customization from modular standard parts. If you need a more specific solution, just give us a call.

Your customer's first physical contact with your product is often through the switches you choose for the human machine interface. TH-Contact products are uncompromisingly high quality items, capable not only of meeting the switching demands of your application but also of ensuring high levels of perceived quality.

Flexibility through modularity

At the heart of the TH-Contact concept is modularity. The flexible contact systems allow pushbuttons, key and rotary switches using common platforms to be created, simplifying assembly and service requirements and providing a wide variety of circuit options.

Aesthetic integrity

All TH-Contact products are designed to complement each other. That's why our switches have matching indicator designs. Combined with a wide range of illumination and actuator options, this ensures that your panel gives a consistent image of quality to your customers – and TH-Contact products feel as good to operate as they look.

Security guaranteed

Many TH-Contact keyswitches offer Kaba locks for the ultimate in security – as specified by the Swiss banking industry. The vandal-resistant TP8 range guarantees that publicly accessible switches go on working, even in difficult environments.

Uncompromising reliability

With many UL, CSA and ENEC approvals, the performance of TH-Contact products is globally recognized. Piezo technology in the TP7 range offers an electrical life in excess of 15 million operations coupled with IP68 environmental protection for the ultimate in durability.

Minimum size

If space behind the panel is an issue for you, the TP2 and TP5 ranges manage to combine the legendary th-contact modularity with a considerably reduced product depth.

Common pushbutton applications

- Industrial machinery control panels
- Public vehicle access systems
- Ticket machines and parking meters
- Shutter control systems
- ATMs
- Car wash systems
- Vending machines

Typical Emergency Stop applications

- Alarm systems
- Portable control equipment
- Industrial process control equipment
- Material handling equipment

Typical keyswitch applications

- Security door systems
- Building automation – elevators & conveyors
- Hydraulic lifting equipment



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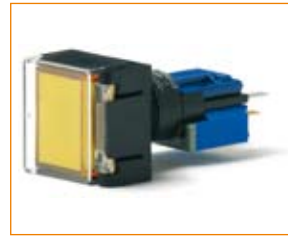
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Panel mounted switches for industrial control equipment

Machine and panel builders need a wide range of switch products which give them:

- many actuator styles to complement their designs
- flexibility of circuit configuration
- varied illumination options
- environmental protection as appropriate
- gold-plated contact options for low current switching
- compliance with UL, CSA and ENEC approvals
- reliability throughout the life of the product
- Emergency Stop capability



Panel mounted switches for transport and building infrastructure



Reliable operation in public environments demands:

- environmental protection to IP65, IP67 and IP68
- long, reliable product life
- vandal-resistant switches

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Table of typical applications & TH-Contact types

In addition to the products shown in the Product Catalog pages, the Product Mapping table below shows a wide range of switch types for a selection of applications. Also, a TH-Contact switch may be customized to fulfill your specific requirements, please feel free to contact us.

Application & TH-Contact Series	TP2	TP5	TP4	TP8	TP9	TP7	TE1/TE8	TI2	TI5	TI9	TK2	E1	M1	K2	P2	P5	TR2	700	J8
Commercial Equipment	●	●	●	●		●	●	●		●	●	●		●	●		●	●	
Distribution	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Home Appliances	●		●			●		●						●	●				
HVAC							●					●	●						
Industrial automation	●		●																
Industry general	●	●	●	●		●	●		●		●	●	●	●	●		●	●	●
Medical	●	●					●				●	●	●						●
Military											●								
Public transportation						●													
Safety and Security										●		●	●	●	●				
Specialist vehicles																		●	●
Page	20	27	33	37	40	44	53	57	61	65	67	73	75	78	80	83	86	92	94

Panel Mounted section – Terminology

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Momentary switch – describes a single operation with a push to engage and an automatic release

Latching switch – describes an alternate action with a push to engage and a further push to release

Panel cut-out – the location point in the panel to mount the switch

Lens – the colored actuator

Contacts – the electrical switching element

NO – normally open contact which is open in the non actuated position and closes a circuit on actuation

NC – normally closed contact which is closed in the non actuated position and opens a circuit on actuation

Bi-functional selection – feature to describe all latching pushbutton switches in the TP2 and TP5 series incorporating a simple selector mechanism to re-determine the function of the switch

Exposed bezel – where the pushbutton lens fits inside the switch bezel

Concealed bezel – where the pushbutton lens fits over the switch bezel

Flush housing – for mounting switches with the minimum protrusion above the panel surface

Raised housing – for mounting switches with the bezel prominent above the panel surface

Snap-in mounting – for mounting switches into a panel from the front without the need of access to the rear of the panel, or without the use locknuts

Enclosure types

Europe IEC specifications 144 & 529 define the degree of protection provided electrical enclosures to safeguard personnel against electric shock and equipment within the enclosure from environmental contamination such as entry of water. This is expressed by the letters IP followed by two numerals.

In the USA, NEMA and UL have established a rating system for enclosures which provides for different levels of protection. A direct comparison between IEC and NEMA is not possible but the following table gives an approximate guide.

Definition	Protection to IEC 144/855420	Protection to NEMA enclosure type	NEMA Definition
Protection against solid objects greater than 12 mm	IP 20	NEMA 1 (ventilated)	general purpose
Protection against solid objects greater than 2.5 mm	IP 30	NEMA 1	general purpose
Protection against solid objects greater than 12 mm and dripping water	IP 21	NEMA 2 (ventilated)	drip proof
Protection against solid objects greater than 2.5 mm and dripping water	IP 31	NEMA 2	drip proof
Protection against solid objects greater than 12 mm and dripping water	IP 24	NEMA 3R (ventilated)	rain proof, sleet (ice) resistant outdoor use
Protection against solid objects greater than 2.5 mm and dripping water	IP 34	NEMA 3R	rain proof, sleet (ice) resistant outdoor use
Protection against dust and splashing liquids	IP 54	–	–
Dusttight and protected against water jets	IP 65	NEMA 12	industrial use dusttight & driptight
Dusttight and protected against heavy seas	IP 66	NEMA 35	dusttight, driptight
Dusttight and protected against heavy seas	IP 66	NEMA 4	dusttight, watertight
		NEMA 4X	dusttight, watertight corrosion resistant
Dusttight and protected against water entry at one meter immersion	IP 67		
Dusttight and protected against heavy submersion	IP 68	NEMA 6	submersible watertight, dusttight sleet (ice) resistant indoor & outdoor
Protection against sleet (ice) not specified by IEC		NEMA 13	oiltight & dusttight

Technical information

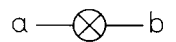
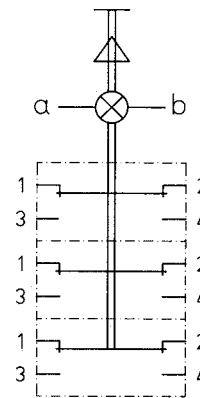
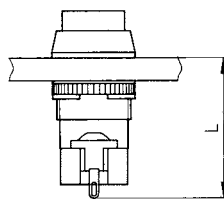
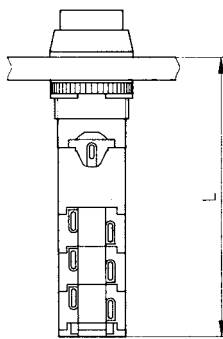
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Actuator	TP4	TP5	TP2		
Switching mechanism	Heart-shaped switching labyrinth	Heart-shaped switching labyrinth with bi-functional mechanism ☺ (momentary or latching function)			
Actuating force	Approx. 2.5N (with one contact block)				
Fixation	Central with metal fixation nut				
Protective system	IP40, IP65		IP40, IP65, IP67		
Bezel material	Thermoplast or anodized aluminum alloy				
Lens material	Thermoplast (polycarbonate in different colors) engravable				
Illumination	T5.5 telephone lamps max. 60 V/1.2 W (incandescent lamps, LEDs, Multi-LEDs)	T 1¾ midget grooved lamps max. 60 V/1.2 W (incandescent lamps, LEDs, Multi-LEDs)			
		Lamp contact «a» = cathode (-)	Lamp contact «b» = cathode (-)		
		Please respect the safety regulations when using the indicator light			
Ambient temperature	-30° to +80° C Heat congestion should be avoided		-30° to +55° C		
Life expectancy mechanical	1'000'000 operating cycles				
Contact block 5 A	The contact block is factory fitted onto the switch Additional elements can be added by the user		Slide-on assembly by the user		
Contact block casing	Duroplast, self-extinguishing (UL 94 V0)				
Terminal material	Silver contact: silver alloy 2µm silver plated Gold contact: silver alloy 2µm silver plated and 0.4µm gold plated				
Contact resistance	Gold plated contact <30 mOhm, silver plated contact <50 mOhm				
Number of contacts	1NO + 1NC per contact block Max. 3 contact blocks per switch		By choice 1NO or 1NC or 1NO + 1NC or 2NO + 2NC per contact block. Max. 2 double contact blocks per switch		
Terminals	Patented, bendable solder terminals for braid wire 2 × 1 mm² or strands 4 × 0.75 mm²		Solder terminals for braid wire 1 × 1 mm² or strands 2 × 0.75 mm². Faston terminals for faston plugs 2.8 × 0.5 mm		
DC load (resistive load)	5 A/12 V	4 A/24 V 0.5 A/125 V	3 A/36 V 0.3 A/250 V	2 A/48 V	1.5 A/60 V
DC load (inductive load L/R = 15 ms)	3 A/12 V	2 A/24 V 0.3 A/125 V	1.7 A/36 V 0.2 A/250 V	1.5 A/48 V	1.2 A/60 V
Switching capacity	5 A, 250 V AC (cos φ 0.7) max. admissible circuit breaker: type C 6 A				
Life expectancy electrical	70'000 operating cycles 5 A, 250 V AC (cos φ 0.7)				
Vibration	Amplitude 1.5 mm pp at 55 Hz				
Contact block 6 A Contact block 16 A				technical information on page 00	

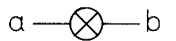
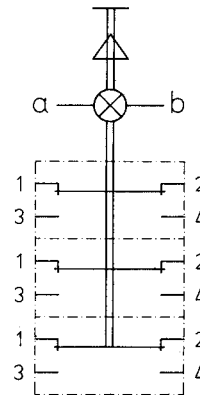
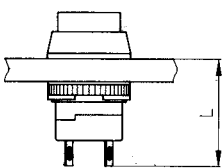
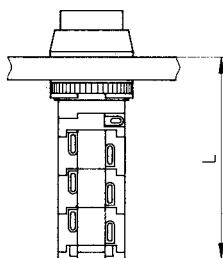
Tightening torques

Hexagonal metal nut	M12 × 0.75	max. 100 Ncm
Metal fixation nut	M16 × 1	max. 150 Ncm
Metal fixation nut	M22 × 1	max. 300 Ncm
Contact block screws for	th4, th5	max. 13 Ncm
Pin screws	M2.5 for anti-rotation plates on th25 switch with plastic ring Ø 25 IP65	max. 30 Ncm
Pin screws	M3 for anti-rotation plates on th4, th25 key switches and rotary switches	max. 20 Ncm

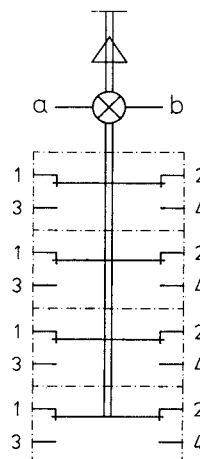
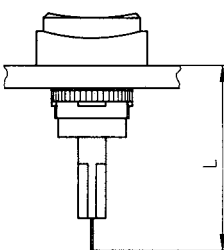
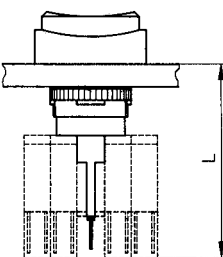
th4



th5



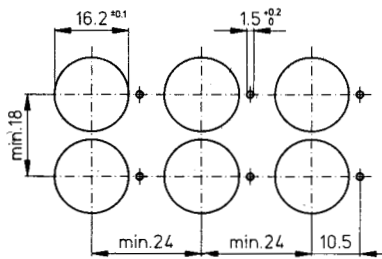
th25



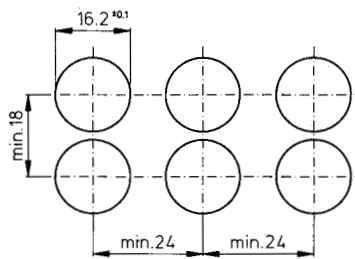
Assembly instructions

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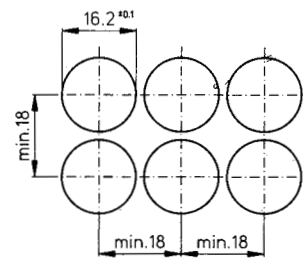
When assembling contact blocks the minimum panel cut-outs must be adjusted to the dimensions shown on pages 20 and 21.



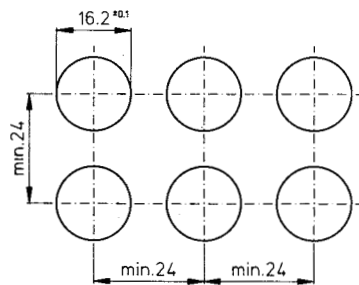
18 x 24 IP40



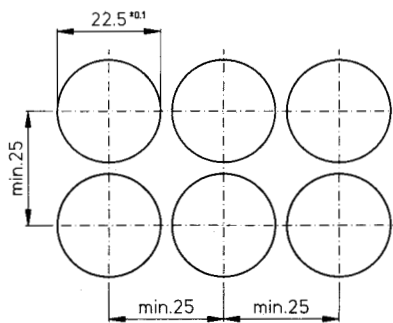
18 x 24 IP67



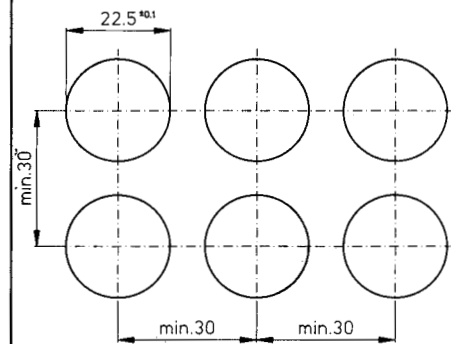
18 x 18 / Ø 18 IP40 / IP67



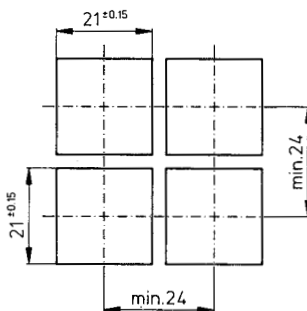
Ø 24 24 x 24 IP40 / IP65



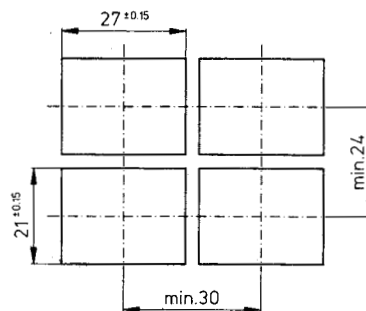
Ø 25 IP40 / IP65 / IP67



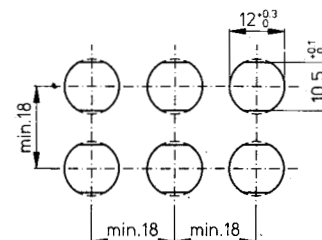
Ø 30 IP65



24 x 24 IP40 / IP67



24 x 30 IP40 / IP67

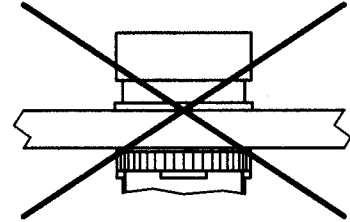
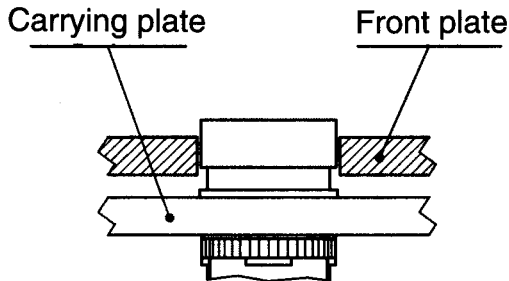


Ø 12 IP40

Caution: In interlocking assemblies the panel cut-out tolerances must not accumulate (max. tol. ± 0.1 mm).

Assembly instructions for switches with concealed plastic bezel for mimic diagrams

This bezel type has been designed especially for mimic diagrams (for example mosaic panels). Please respect by all means the assembly instructions on the respective catalog pages.

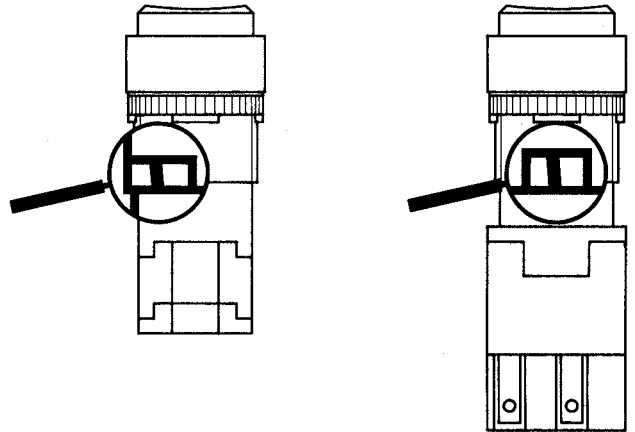


Bi-functional selection

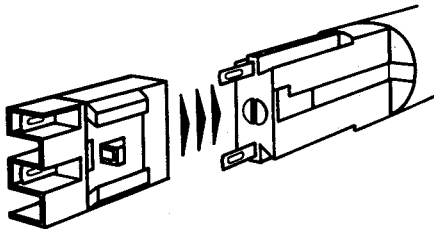
All the latching switches in the th5 and th25 series incorporate a simple selector mechanism for redetermining the function of the switch. These products are marked with a ☺. This mechanism is not supplied in the momentary switch nor in interlocking assemblies.

Application:

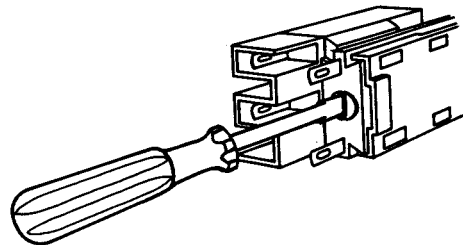
When the switch is in the "off" position, the selector mechanism in the small side opening on the basic element can be shifted to the right to obtain the momentary function (for example with an opened paper clip), or vice versa to return to the latching function.



Assembly of the contact blocks



Turn the slot of the red locking pin parallel to the dovetail of the switch body and slide the contact block onto the dovetail.

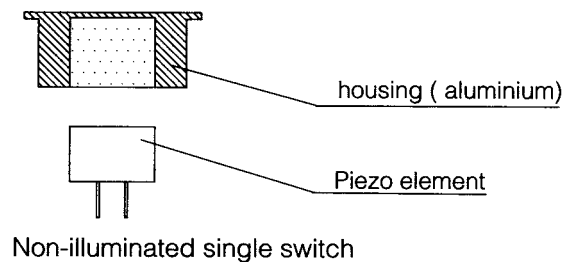
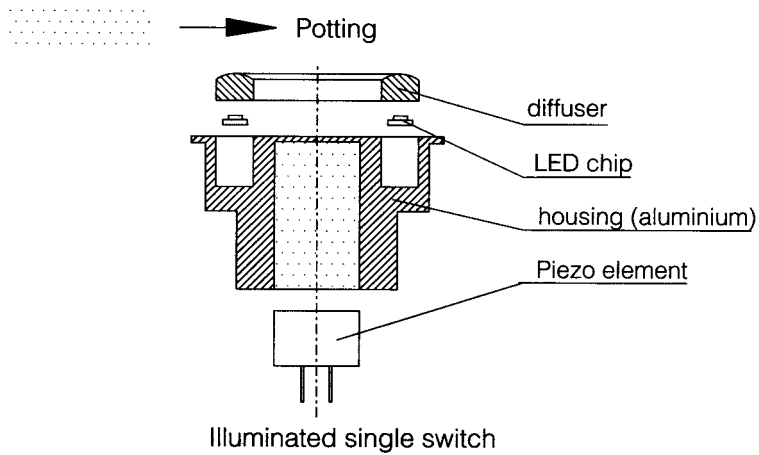
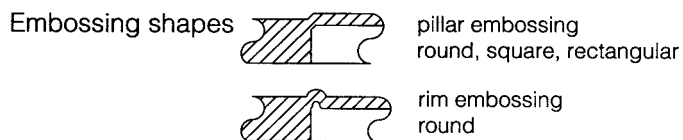
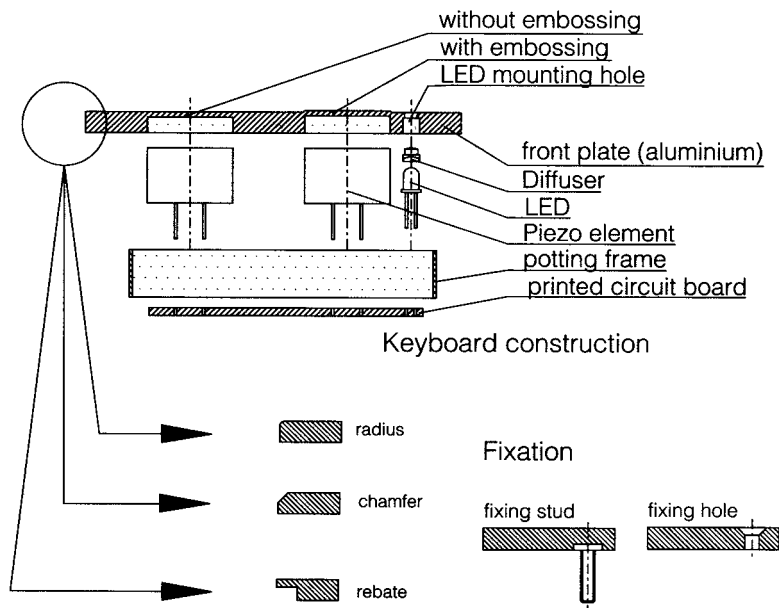


When the switch is in «off» position the contact block must be pushed firmly into position and held there. Secure by turning the red locking pin a quarter turn in an clockwise direction with a suitable screwdriver.

Piezo Switches

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Construction of our Piezo single switches and keyboards



Panel Mounted Products

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Push Button



Type	TP2	TP5	TP4	TP8	TP9
Panel cut-out (mm)	Ø 16.2/22.5	Ø 16.2/22.5	Ø 16.2/22.5	Ø 22.5	Ø 16.2/22.5
Characteristics	- momentary or latching - sealed IP40, IP65 or IP67 - wide range of bezels - with or without illumination - NO, NC, CO - gold plated single or double pole contact blocks	- momentary or latching - sealed IP40 or IP65 - wide range of bezels - shallow mounting depth - with or without illumination - NO, NC - gold plated contact blocks	- mushroom - momentary or latching - sealed IP40 or IP65 - wide range of bezels - NO, NC - gold plated contact blocks	- momentary - sealed IP67 - round metal bezels 1NO + 1 NC, 2 NC, 2 NO - gold plated contact block	- momentary short stroke switch - sealed IP65 or IP67 - round metal bezels - NO - snap-in mounting option Ø 22.5 mm (IP65 only)
Rating	250 VAC, 5 A	250 VAC, 5 A	250 VAC, 5 A	230 VAC, 6 A	50 VAC/VDC, 50 mA
Dimensions (mm)	18 × 24 18 × 18 Ø 18 Ø 25	18 × 24 18 × 18 Ø 18 Ø 25	18 × 24 24 × 24 Ø 24 Ø 30	Ø 25	Ø 18 Ø 25
Actuator	lenses in different shapes and colors	lenses in different shapes and colors	mushroom cap in different shapes and colors	button and housing in different colors	button and housing in different colors
Approvals	UL, CSA, VDE	UL, CSA, VDE	UL, CSA, VDE	none	none
Page	20	27	33	37	40

Push Button



Emergency Stop



Indicators



Type	TP7	TE1	TE8	TI2	TI5
Panel cut-out (mm)	Ø 16.2/22.5/30.3/43.3	Ø 16.2/22.5	Ø 16.2/22.5	Ø 16.2/22.5	Ø 16.2/22.5
Characteristics	- piezo technology - momentary - sealed IP68 - with or without illumination, two colors - solid state output - NO	- meets EN418 directives - sealed IP65 - rotary, reset mechanism <20 mm behind panel depth 1NO + 1 NC or 2 NC	- meets EN418 directives (Ø 27 mm only) - sealed IP66 or IP67 - rotary pull or key reset - yellow disk bezel (optional) 1NO + 1 NC or 2 NC	- illuminated - sealed IP40, IP65 or IP67 - wide range of bezels - midjet grooved lamp/LED	- illuminated - sealed IP40, IP65 or IP67 - wide range of bezels - midjet grooved lamp/LED
Rating	3 to 35 VAC/VDC, 200 mA	250 VAC, 2 A	250 VAC, 6 A	max. 60 VAC/VDC	max. 60 VAC/VDC
Dimensions (mm)	Ø 18 Ø 25 Ø 36 Ø 48	Ø 25 Ø 30 Ø 40	Ø 27 Ø 40	18 × 24 18 × 18 Ø 18 Ø 25	18 × 24 18 × 18 Ø 18 Ø 25
Actuator	housing in different colors	red mushroom cap	red mushroom cap (Ø 27 mm only) reset by KABA key (Ø 40 mm only)	lenses in different shapes and colors	lenses in different shapes and colors
Approvals	none	IEC 947-5-1/947-5-5	IEC 947-5-1/947-5-5 (Ø 27 mm only)	UL, CSA, VDE	UL, CSA, VDE
Page	44	53	56	60	64

Panel Mounted Products

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Keyswitch



Type	TI9	TK2	E1	M1
Panel cut-out (mm)	Ø 22.5	Ø 16.2/22.5	Ø 15.1 × 15.1	Ø 15.1 × 15.1
Characteristics	■ illuminated ■ sealed IP67 ■ round metal bezels ■ red LED ■ green LED ■ red-green LED	■ 2 and 3 position ■ sealed IP40 or IP65 ■ plastic or aluminum bezels ■ wide range of bezels ■ NO, NC ■ gold plated, single or double pole, contact blocks ■ key trapping options	■ tamper proof ■ 2 positions ■ key trapping options ■ gold-plated contacts ■ PCB terminals	■ double pole change-over or three circuit selector switching functions ■ key trapping option ■ two body style options ■ gold-plated contacts ■ PCB terminals
Rating	24 VDC, 20 mA	250 VAC, 5 A	250 VAC, 100 mA	250 VAC, 100 mA
Dimensions (mm)	Ø 25	18 × 24 18 × 18 Ø 18 Ø 25	18 × 16	18 × 16 body style A 18 × 18 body style E
Actuator	■ aluminum housing in different colors	■ key-KABA MICRO	■ plastic key	■ key (common or differs)
Approvals	none	UL, CSA, VDE	none	none
Page	68	70	76	78

Rotary



Type	K2	P2	P5	TR2
Panel cut-out (mm)	Ø 19.1	Ø 19.1	Ø 20.6	Ø 16.2/22.5
Characteristics	■ choice of off-on or change-over center off or spring return options ■ key trapping option ■ solder terminals	■ up to 12 contact pairs ■ 2 security options with key actuation ■ from 2 to 4 switch positions ■ key trapping option ■ solder terminals	■ high electrical rating ■ key trapping option ■ choice of off-on, change-over with spring return or change-over with separate circuits	■ 2 and 3 position ■ sealed IP40 or IP65 ■ plastic or aluminum bezels ■ NO, NC ■ gold plated, single or double pole, contact blocks
Rating	up to 250 VAC, 2 A	250 VAC, 2 A	up to 125 VAC, 10 A up to 250 VAC, 5 A	250 VAC, 5 A
Dimensions (mm)	Ø 22	Ø 22	Ø 38.1 × 45.7 off-on Ø 38.1 × 58.4 change-over	18 × 24 18 × 18 Ø 18 Ø 25
Actuator	■ key (common or differs)	■ key (common or differs)	■ key (common or differs)	■ black knob, with white indicating bar
Approvals	UL and CSA	UL (optional)	UL and CSA	UL, CSA, VDE
Page	81	83	86	89

Panel Mount Products

Joystick

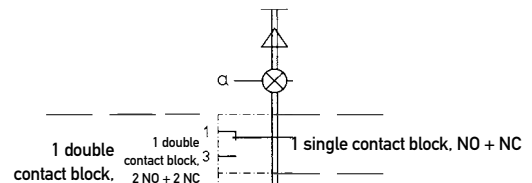


Type	700	J8
Panel cut-out (mm)	Ø 22 × 20	Ø 22.5
Characteristics	■ single or double pole ■ choice of directional gating options ■ miniature or subminiature microswitch types	■ choice of directional gating options ■ choice of microswitch functions
Rating	up to 15 A, 250 VAC, miniature microswitches up to 6 A, 250 VAC, subminiature microswitches	up to 16 A, 250 VAC up to 5 A, 250 VAC
Dimensions (mm)	55 × 55 × 57.2 miniature microswitches 41.3 × 41.3 × 57.2 subminiature microswitches	up to 74.5 × 74.5 × 105 up to Ø 60 × 60 × 103.5
Actuator	■ knob	■ knob
Approvals	ENEC, UL and CSA (switch only)	ENEC, UL and CSA (switch only)
Page	92	94

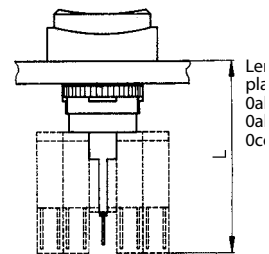
Modular Push Button



Circuit diagram (2 double contact blocks)



Dimension



TP2

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TP2

Panel cut-out (mm)	Ø 16.2 or Ø 22.5
Characteristics	- momentary or latching - sealed IP40, IP65 or IP67 - wide range of bezels - with or without illumination - NO, NC, CO - gold plated single or double pole contact blocks
Rating	250 VAC, 5 A
Dimensions (mm)	18 × 24 18 × 18 Ø 18 Ø 25
Actuator	lenses in different shapes and colors
Approvals	UL, CSA, VDE



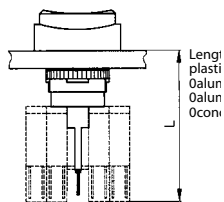
Popular products

Ordering Reference	Panel cut-out	Function	Actuator style	Terminals	Electrical rating
TP21LAAC1C1A4CN	Ø 16.2 mm	Latching; IP40	18 × 24 mm, red Illumination	2.8 × 0.5 mm faston	250 VAC, 5A
TP21LDAC1C1D4CN	Ø 16.2 mm	Latching; IP40	Ø 18 mm, red Illumination	2.8 × 0.5 mm faston	250 VAC, 5A
TP21MAAC1C1A4CN	Ø 16.2 mm	Momentary; IP40	18 × 24 mm, red Illumination	2.8 × 0.5 mm faston	250 VAC, 5A
TP21MDAC1C1D4CN	Ø 16.2 mm	Momentary; IP40	Ø 18 mm, red Illumination	2.8 × 0.5 mm faston	250 VAC, 5A
TP22LFAC1C1E4CN	Ø 22.5 mm	Latching; IP65	Ø 25 mm, red Illumination	2.8 × 0.5 mm faston	250 VAC, 5A
TP22MFAC1C1E4CN	Ø 22.5 mm	Momentary; IP65	Ø 25 mm, red Illumination	2.8 × 0.5 mm faston	250 VAC, 5A

Specifications

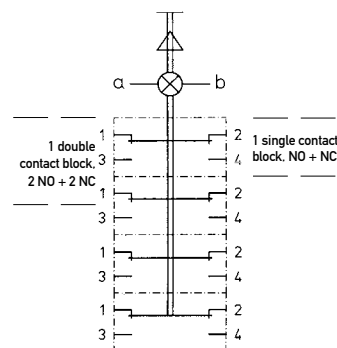
Mechanism	Bi-functional – momentary or latching
Actuating force	Approximately 2.5N – 1 contact block
Mounting	Central fixing with metal lock nut
Protection	IP40, IP65, IP67
Bezel material	Thermoplastic or anodized aluminum alloy
Lens material	Polycarbonate – engravable
Illumination	T1 ¾ midget grooved lamps – incandescent lamps, LEDs, multi LEDs 60 V, 1.2W maximum Lamp contact "b" = cathode (-) Appropriate safety regulations should be respected when using the indicator light.
Temperature range °C	-25°C to +85°C
Mechanical life	10 ⁶ cycles
Contact block	Slide-on assembly by the user with locking mechanism
Contact block housing	Self-extinguishing duroplastic (UL 94 plus V0)
Terminal material	Silver alloy with 0.2 µm silver plating, 0.4 µm gold plating
Contact resistance	<30 mOhm
Number of contact blocks	User configurable NO or NC types up to a maximum of 2 double contact blocks
Terminals	Solder – suitable for wire diameter 1 × 1.00 mm ² (braided), 2 × 0.75 mm (stranded) Faston – 2.8 mm × 0.5 mm
Vibration resistance	1.5 mm pp amplitude at 55 Hz

Dimensions



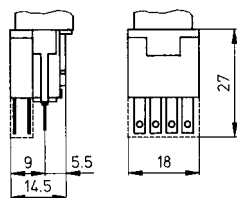
Length in mm (with contact block)	
plastic bezels	43.0
aluminum bezels	42.0
aluminum bezels	50.0
concealed mounting	

Circuit diagram (2 double contact blocks)

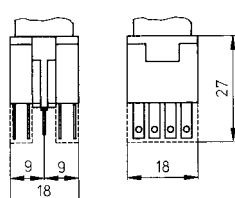


Contact blocks

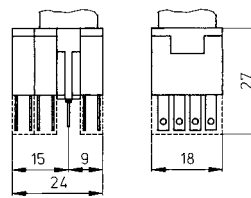
1 single contact block



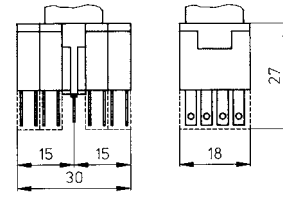
2 single contact blocks



1 single contact block + 1 double contact block



2 double contact blocks



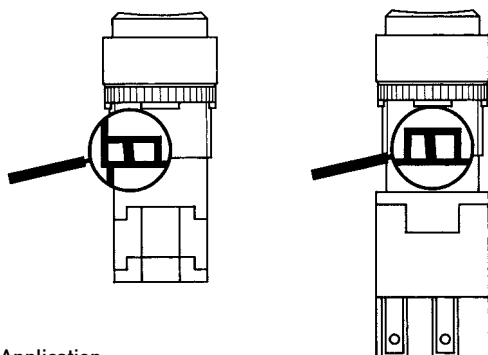
Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load (A)	Approval
250 VAC	5.0 (0.7 pf)	L/R = 15 ms	UL, CSA, VDE - max. admissible circuit breaker C6A
12 VDC	5.0	3.0	General rating
24 VDC	4.0	2.0	General rating
36 VDC	3.0	1.7	General rating
48 VDC	2.0	1.5	General rating
60 VDC	1.5	1.2	General rating
125 VDC	0.5	0.3	General rating
250 VDC	0.3	0.2	General rating

Electrical life 50,000 cycles at 5A, 250 VAC, 0.7 pf

Bi-functional selection

All latching switches in the range incorporate a simple selector mechanism for modifying the function of the switch. This function is not available with momentary switches.

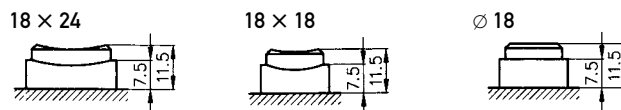


Application:

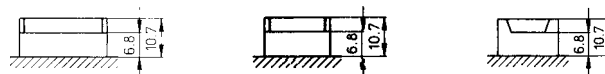
When the switch is in the off position the selector mechanism can be moved to the right to obtain a momentary function, or to the left to return to a latching function.

Plastic bezel and lens heights in mm (switch off position)

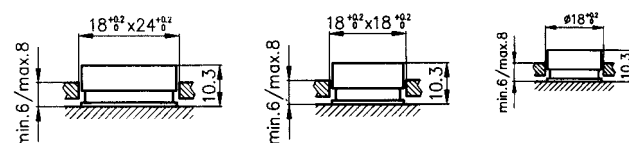
exposed version IP40



exposed version IP67



Panel cut-out exposed version 16.2 ± 0.1 mm

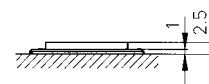


Aluminum bezel Ø 25 and lens heights in mm (switch off position)

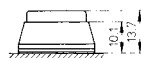
aluminum bezel
without sealing gasket (IP40)



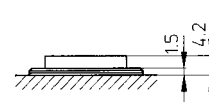
aluminum bezel
countersunk mounting (IP40)



aluminum bezel
with sealing gasket (IP65)



aluminum bezel
countersunk mounting (IP67)



Panel cut-out 22.5 ± 0.1 mm

Front panel thickness

plastic bezel

1.0 mm to 6.5 mm

aluminum bezel 1.0 mm to 5.0 mm

countersunk mounting 2.0 mm to 15.0 mm

Ordering Reference

Basic type	TP2					Example: TP2	1	MAA	A1	A1	A0	A	N	
Panel cut-out	1	Ø 16.2 mm												
Switch body (A)	MAA LAA MAC LAC MAB LAB	Function	Actuator	Housing (plastic)	Part No.									
		Momentary	18 × 24 mm	Exposed ; IP40; faston	TH501008000									
		Latching_	18 × 24 mm	Exposed ; IP40; faston	TH511008000									
		Momentary	18 × 24 mm	Exposed ; IP67; faston	TH501015000									
		Latching_	18 × 24 mm	Exposed ; IP67; faston	TH511015000									
		Momentary	18 × 24 mm	Concealed ; IP40; faston	TH501002000									
	MBA LBA MBC LBC MBB LBB	Momentary	18 × 18 mm	Exposed ; IP40; faston	TH503008000									
		Latching_	18 × 18 mm	Exposed ; IP40; faston	TH513008000									
		Momentary	18 × 18 mm	Exposed ; IP67; faston	TH503015000									
		Latching_	18 × 18 mm	Exposed ; IP67; faston	TH513015000									
		Momentary	18 × 18 mm	Concealed ; IP40; faston	TH503002000									
		Latching_	18 × 18 mm	Concealed ; IP40; faston	TH513002000									
	MDA LDA MDC LDC MDB LDB	Momentary	Ø 18 mm	Exposed ; IP40; faston	TH505008000									
		Latching_	Ø 18 mm	Exposed ; IP40; faston	TH515008000									
		Momentary	Ø 18 mm	Exposed ; IP67; faston	TH505015000									
		Latching_	Ø 18 mm	Exposed ; IP67; faston	TH515015000									
		Momentary	Ø 18 mm	Concealed ; IP40; faston	TH505002000									
		Latching_	Ø 18 mm	Concealed ; IP40; faston	TH515002000									
	Contact block, gold Position 1	XX	No Contact Blocks		Terminals	Part No.								
		A1	NO		2.8 × 0.5mm	TH593566020								
		A9	NO		Insulated faston	TH593560020								
		A8	NO		Solder	TH593561020								
		B1	NC		2.8 × 0.5mm	TH593566050								
		B9	NC		Insulated faston	TH593560050								
B8		NC		Solder	TH593561050									
C1		1 NO + 1 NC		2.8 × 0.5mm	TH593566000									
C9		1 NO + 1 NC		Insulated faston	TH593560000									
C8		1 NO + 1 NC		Solder	TH593561000									
D1		2 NO + 2 NC		2.8 × 0.5mm	TH593567000									
D9		2 NO + 2 NC		Insulated faston	TH593563000									
D8		2 NO + 2 NC		Solder	TH593564000									
Contact block, gold Position 2		XX	No Contact Blocks		Terminals	Part No.								
		A1	NO		2.8 × 0.5mm	TH593566020								
		A9	NO		Insulated faston	TH593560020								
		A8	NO		Solder	TH593561020								
		B1	NC		2.8 × 0.5mm	TH593566050								
	B9	NC		Insulated faston	TH593560050									
	B8	NC		Solder	TH593561050									
	C1	1 NO + 1 NC		2.8 × 0.5mm	TH593566000									
	C9	1 NO + 1 NC		Insulated faston	TH593560000									
	C8	1 NO + 1 NC		Solder	TH593561000									
	D1	2 NO + 2 NC		2.8 × 0.5mm	TH593567000									
	D9	2 NO + 2 NC		Insulated faston	TH593563000									
	D8	2 NO + 2 NC		Solder	TH593564000									
	Lens, transparent For Switch body style (A)	A0	White	Exposed	Exposed IP40	Exposed IP67	Concealed	Concealed IP 40						
		A1	Yellow	15 × 21 mm	TH461021000	TH561011000	18 × 24 mm	TH461017000						
		A2	Green	15 × 21 mm	TH461121000	TH561111000	18 × 24 mm	TH461117000						
		A3	Blue	15 × 21 mm	TH461221000	TH561211000	18 × 24 mm	TH461217000						
		A4	Red	15 × 21 mm	TH461321000	TH561311000	18 × 24 mm	TH461317000						
A6		Orange	15 × 21 mm	TH461421000	TH561411000	18 × 24 mm	TH461417000							
For Switch body style (B)		B0	White	15 × 15 mm	TH463021000	TH563011000	18 × 18 mm	TH463018000						
		B1	Yellow	15 × 15 mm	TH463121000	TH563111000	18 × 18 mm	TH463118000						
		B2	Green	15 × 15 mm	TH463221000	TH563211000	18 × 18 mm	TH463218000						
		B3	Blue	15 × 15 mm	TH463321000	TH563311000	18 × 18 mm	TH463318000						
		B4	Red	15 × 15 mm	TH463421000	TH563411000	18 × 18 mm	TH463418000						
		B6	Orange	15 × 15 mm	TH463621000	TH563611000	18 × 18 mm	TH463618000						
For Switch body style (C)	D0	White	Ø 15 mm	TH465021000	TH565011000	Ø 18 mm	TH465015000							
	D1	Yellow	Ø 15 mm	TH465121000	TH565111000	Ø 18 mm	TH465115000							
	D2	Green	Ø 15 mm	TH465221000	TH565211000	Ø 18 mm	TH465215000							
	D3	Blue	Ø 15 mm	TH465321000	TH565311000	Ø 18 mm	TH465315000							
	D4	Red	Ø 15 mm	TH465421000	TH565411000	Ø 18 mm	TH465415000							
	D6	Orange	Ø 15 mm	TH465621000	TH565611000	Ø 18 mm	TH465615000							
Illumination	X	Non illuminated												
	A	6V												
	B	12V												
	C	24V												
Illumination Color	X	Non illuminated												
	N	Incandescent lamp	6 V, 200 mA		12 V, 80 mA		24 V, 50 mA		48 V, 25 mA					
			TH590000000		TH590001000		TH590006000		TH590004000					
			6 V AC/DC, 45 mA		12 V AC/DC, 25 mA		24 V AC/DC, 12.5 mA		48 V AC/DC, 12.5 mA					
			TH590231000		TH590234000		TH590237000		TH590240000					
1	Yellow LED	TH590232000		TH590235000		TH590238000		TH590241000						
2	Green LED	TH590230000		TH590233000		TH590236000		TH590239000						
4	Red LED													

Note: Contact blocks will be supplied unassembled

Ordering Reference

Basic type		TP2		Example: TP2				1	MAD	A1	A1	A0	A	N	
Panel cut-out		1		Ø 16.2 mm											
Switch body (A)	(A)	MAD	Momentary	18 × 24 mm	Exposed ; IP40; solder	TH501108000									
		LAD	Latching_	18 × 24 mm	Exposed ; IP40; solder	TH511108000									
		MAF	Momentary	18 × 24 mm	Exposed ; IP67; solder	TH501115000									
		LAF	Latching_	18 × 24 mm	Exposed ; IP67; solder	TH511115000									
		MAE	Momentary	18 × 24 mm	Concealed ; IP40; solder	TH501102000									
		LAE	Latching_	18 × 24 mm	Concealed ; IP40; solder	TH511102000									
	(B)	MBD	Momentary	18 × 18 mm	Exposed ; IP40; solder	TH503108000									
		LBD	Latching_	18 × 18 mm	Exposed ; IP40; solder	TH513108000									
		MBF	Momentary	18 × 18 mm	Exposed ; IP67; solder	TH503115000									
		LBF	Latching_	18 × 18 mm	Exposed ; IP67; solder	TH513115000									
		MBE	Momentary	18 × 18 mm	Concealed ; IP40; solder	TH503102000									
		LBE	Latching_	18 × 18 mm	Concealed ; IP40; solder	TH513102000									
	(C)	MDD	Momentary	Ø 18 mm	Exposed ; IP40; solder	TH505108000									
		LDD	Latching_	Ø 18 mm	Exposed ; IP40; solder	TH515108000									
		MDF	Momentary	Ø 18 mm	Exposed ; IP67; solder	TH505115000									
		LDF	Latching_	Ø 18 mm	Exposed ; IP67; solder	TH515115000									
		MDE	Momentary	Ø 18 mm	Concealed ; IP40; solder	TH505102000									
		LDE	Latching_	Ø 18 mm	Concealed ; IP40; solder	TH515102000									
Contact block, gold Position 1	XX	No Contact Blocks		Terminals		Part No.									
	A1	NO		2.8 × 0.5mm		TH593566020									
	A9	NO		Insulated faston		TH593560020									
	A8	NO		Solder		TH593561020									
	B1	NC		2.8 × 0.5mm		TH593566050									
	B9	NC		Insulated faston		TH593560050									
	B8	NC		Solder		TH593561050									
	C1	1 NO + 1 NC		2.8 × 0.5mm		TH593566000									
	C9	1 NO + 1 NC		Insulated faston		TH593560000									
	C8	1 NO + 1 NC		Solder		TH593561000									
	D1	2 NO + 2 NC		2.8 × 0.5mm		TH593567000									
	D9	2 NO + 2 NC		Insulated faston		TH593563000									
	D8	2 NO + 2 NC		Solder		TH593564000									
Contact block, gold Position 2	XX	No Contact Blocks		Terminals		Part No.									
	A1	NO		2.8 × 0.5mm		TH593566020									
	A9	NO		Insulated faston		TH593560020									
	A8	NO		Solder		TH593561020									
	B1	NC		2.8 × 0.5mm		TH593566050									
	B9	NC		Insulated faston		TH593560050									
	B8	NC		Solder		TH593561050									
	C1	1 NO + 1 NC		2.8 × 0.5mm		TH593566000									
	C9	1 NO + 1 NC		Insulated faston		TH593560000									
	C8	1 NO + 1 NC		Solder		TH593561000									
	D1	2 NO + 2 NC		2.8 × 0.5mm		TH593567000									
	D9	2 NO + 2 NC		Insulated faston		TH593563000									
	D8	2 NO + 2 NC		Solder		TH593564000									
Lens, transparent For Switch body style (A)	A0	White	15 × 21 mm	Exposed	TH461021000	Exposed IP40	TH561011000	Exposed IP67	TH561011000	Concealed	18 × 24 mm	TH461017000			
	A1	Yellow	15 × 21 mm		TH461121000		TH561111000		TH561111000		18 × 24 mm	TH461117000			
	A2	Green	15 × 21 mm		TH461221000		TH561211000		TH561211000		18 × 24 mm	TH461217000			
	A3	Blue	15 × 21 mm		TH461321000		TH561311000		TH561311000		18 × 24 mm	TH461317000			
	A4	Red	15 × 21 mm		TH461421000		TH561411000		TH561411000		18 × 24 mm	TH461417000			
	A6	Orange	15 × 21 mm		TH461621000		TH561611000		TH561611000		18 × 24 mm	TH461617000			
	For Switch body style (B)	B0	White	15 × 15 mm		TH463021000		TH563011000		TH563011000		18 × 18 mm	TH463018000		
		B1	Yellow	15 × 15 mm		TH463121000		TH563111000		TH563111000		18 × 18 mm	TH463118000		
		B2	Green	15 × 15 mm		TH463221000		TH563211000		TH563211000		18 × 18 mm	TH463218000		
		B3	Blue	15 × 15 mm		TH463321000		TH563311000		TH563311000		18 × 18 mm	TH463318000		
		B4	Red	15 × 15 mm		TH463421000		TH563411000		TH563411000		18 × 18 mm	TH463418000		
		B6	Orange	15 × 15 mm		TH463621000		TH563611000		TH563611000		18 × 18 mm	TH463618000		
	For Switch body style (C)	D0	White	Ø 15 mm		TH465021000		TH565011000		TH565011000		Ø 18 mm	TH465015000		
		D1	Yellow	Ø 15 mm		TH465121000		TH565111000		TH565111000		Ø 18 mm	TH465115000		
		D2	Green	Ø 15 mm		TH465221000		TH565211000		TH565211000		Ø 18 mm	TH465215000		
		D3	Blue	Ø 15 mm		TH465321000		TH565311000		TH565311000		Ø 18 mm	TH465315000		
		D4	Red	Ø 15 mm		TH465421000		TH565411000		TH565411000		Ø 18 mm	TH465415000		
		D6	Orange	Ø 15 mm		TH465621000		TH565611000		TH565611000		Ø 18 mm	TH465615000		
Illumination	X	Non illuminated													
	A	6V													
	B	12V													
	C	24V													
Illumination Color	F	48V													
	X	Non illuminated													
	N	Incandescent lamp		6 V, 200 mA TH590000000	12 V, 80 mA TH590001000	24 V, 50 mA TH590006000	48 V, 25 mA TH590004000								
	1	Yellow LED		6 V AC/DC, 45 mA TH590231000	12 V AC/DC, 25 mA TH590234000	24 V AC/DC, 12.5 mA TH590237000	48 V AC/DC, 12.5 mA TH590240000								
	2	Green LED		TH590232000	TH590235000	TH590238000	TH590241000								
	4	Red LED		TH590230000	TH590233000	TH590236000	TH590239000								

Note: Contact blocks will be supplied unassembled

Ordering Reference

Basic type	TP2				Example: TP2		2	MFA	A1	A1	E0	A	N
Panel cut-out	2	Ø 22.5 mm											
Switch body (A)	Function		Actuator	Housing	Part No.								
	MFA	Momentary	Ø 25	Exposed plastic; IP65; faston	TH505020000								
	LFA	Latching_	Ø 25	Exposed plastic; IP65; faston	TH515020000								
	(B)	MFB	Momentary	Ø 25	Exposed aluminum; IP40 / IP65*; faston	TH505018000							
		LFB	Latching_	Ø 25	Exposed aluminum; IP40 / IP65*; faston	TH515018000							
	MFC	Momentary	Ø 25	Exposed aluminum; IP65* with silicon cap; faston	TH505033000								
	LFC	Latching_	Ø 25	Exposed aluminum; IP65* with silicon cap; faston	TH515033000								
	MFD	Momentary	Ø 25	Flush-aluminum; IP40; faston	TH505050000								
	LFD	Latching_	Ø 25	Flush-aluminum; IP40; faston	TH515050000								
	MFE	Momentary	Ø 25	Flush-aluminum; IP67; faston	TH505051000								
	LFE	Latching_	Ø 25	Flush-aluminum; IP67; faston	TH515051000								
Contact block, gold Position 1	XX		No contact blocks		Terminals				Part No.				
	A1	NO			2.8 × 0.5mm				TH593566020				
	A9	NO			Insulated faston				TH593560020				
	A8	NO			Solder				TH593561020				
	B1	NC			2.8 × 0.5mm				TH593566050				
	B9	NC			Insulated faston				TH593560050				
	B8	NC			Solder				TH593561050				
	C1	1 NO + 1 NC			2.8 × 0.5mm				TH593566000				
	C9	1 NO + 1 NC			Insulated faston				TH593560000				
	C8	1 NO + 1 NC			Solder				TH593561000				
	D1	2 NO + 2 NC			2.8 × 0.5mm				TH593569000				
	D9	2 NO + 2 NC			Insulated faston				TH593563000				
	D8	2 NO + 2 NC			Solder				TH593564000				
	Contact block, gold Position 2	XX		No contact blocks		Terminals				Part No.			
A1		NO			2.8 × 0.5mm				TH593566020				
A9		NO			Insulated faston				TH593560020				
A8		NO			Solder				TH593561020				
B1		NC			2.8 × 0.5mm				TH593566050				
B9		NC			Insulated faston				TH593560050				
B8		NC			Solder				TH593561050				
C1		1 NO + 1 NC			2.8 × 0.5mm				TH593566000				
C9		1 NO + 1 NC			Insulated faston				TH593560000				
C8		1 NO + 1 NC			Solder				TH593561000				
D1		2 NO + 2 NC			2.8 × 0.5mm				TH593569000				
D9		2 NO + 2 NC			Insulated faston				TH593563000				
D8		2 NO + 2 NC			Solder				TH593564000				
Lens, transparent For Switch body style (A)		E0	White	Ø 21	TH565024000	For Plastic Bezel only IP65							
	E1	Yellow	Ø 21	TH565124000									
	E2	Green	Ø 21	TH565224000									
	E3	Blue	Ø 21	TH565324000									
	E4	Red	Ø 21	TH565424000									
	E6	Orange	Ø 21	TH565624000									
For Switch body style (B)	F0	White	Ø 18	TH465015000	IP40/IP65	IP65 with Silion cap	IP67	For Aluminum Bezel only					
	F1	Yellow	Ø 18	TH465115000	TH465001000	TH465101000	TH565025000						
	F2	Green	Ø 18	TH465215000	TH465201000	TH465225000	TH565125000						
	F3	Blue	Ø 18	TH465315000	TH465301000	TH465325000	TH565225000						
	F4	Red	Ø 18	TH465415000	TH465401000	TH465425000	TH565325000						
	F6	Orange	Ø 18	TH465615000	TH465601000	TH465625000	TH565425000						
Illumination	X	Non illuminated											
	A	6V											
	B	12V											
	C	24V											
Illumination Color	F	48V											
	X	Non illuminated											
	N	Incandescent lamp		6V, 200 mA TH590000000	12V, 80 mA TH590001000	24V, 50 mA TH590006000	48V, 25 mA TH590004000						
	1	Yellow LED		6V AC/DC, 45 mA TH590231000	12V AC/DC, 25 mA TH590234000	24V AC/DC, 12.5 mA TH590237000	48V AC/DC, 12.5 mA TH590240000						
	2	Green LED		TH590232000	TH590235000	TH590238000	TH590241000						
	4	Red LED		TH590230000	TH590233000	TH590236000	TH590239000						

Note: Contact blocks will be supplied unassembled

Ordering Reference

Basic type	TP2				Example: TP2	2	MFF	A1	A1	E0	A	N			
Panel cut-out	2	Ø 22.5 mm													
Switch body (A)		Function	Actuator	Housing	Part No.										
	MFF	Momentary	Ø 25	Exposed plastic; IP65; solder	TH505120000										
	LFF	Latching	Ø 25	Exposed plastic; IP65; solder	TH515120000										
	(B)	MFG	Momentary	Ø 25	Exposed aluminum; IP40 / IP65*; solder	TH505118000									
		LFG	Latching	Ø 25	Exposed aluminum; IP40 / IP65*; solder	TH515118000									
	MFH	Momentary	Ø 25	Exposed aluminum; IP65* with silicon cap; solder	TH505133000										
	LFH	Latching	Ø 25	Exposed aluminum; IP65* with silicon cap; solder	TH515133000										
	MFJ	Momentary	Ø 25	Flush-aluminum; IP40; solder	TH505150000										
	LFJ	Latching	Ø 25	Flush-aluminum; IP40; solder	TH515150000										
	MFK	Momentary	Ø 25	Flush-aluminum; IP67; solder	TH505151000										
	LFK	Latching	Ø 25	Flush-aluminum; IP67; solder	TH515151000										
Contact block, gold Position 1	XX	No Contact Blocks		Terminals		Part No.									
	A1	NO		2.8 × 0.5mm		TH593566020									
	A9	NO		Insulated faston		TH593560020									
	A8	NO		Solder		TH593561020									
	B1	NC		2.8 × 0.5mm		TH593566050									
	B9	NC		Insulated faston		TH593560050									
	B8	NC		Solder		TH593561050									
	C1	1 NO + 1 NC		2.8 × 0.5mm		TH593566000									
	C9	1 NO + 1 NC		Insulated faston		TH593560000									
	C8	1 NO + 1 NC		Solder		TH593561000									
	D1	2 NO + 2 NC		2.8 × 0.5mm		TH593567000									
	D9	2 NO + 2 NC		Insulated faston		TH593563000									
	D8	2 NO + 2 NC		Solder		TH593564000									
Contact block, gold Position 2	XX	No Contact Blocks		Terminals		Part No.									
	A1	NO		2.8 × 0.5mm		TH593566020									
	A9	NO		Insulated faston		TH593560020									
	A8	NO		Solder		TH593561020									
	B1	NC		2.8 × 0.5mm		TH593566050									
	B8	NC		Solder		TH593561050									
	C1	1 NO + 1 NC		2.8 × 0.5mm		TH593566000									
	C9	1 NO + 1 NC		Insulated faston		TH593560000									
	C8	1 NO + 1 NC		Solder		TH593561000									
	D1	2 NO + 2 NC		2.8 × 0.5mm		TH593567000									
	D9	2 NO + 2 NC		Insulated faston		TH593563000									
	D8	2 NO + 2 NC		Solder		TH593564000									
	Lens, transparent For Switch body style (A)	E0	White	Ø 21	TH565024000	For Plastic Bezel only IP65									
E1		Yellow	Ø 21	TH565124000											
E2		Green	Ø 21	TH565224000											
E3		Blue	Ø 21	TH565324000											
E4		Red	Ø 21	TH565424000											
E6		Orange	Ø 21	TH565624000											
For Switch body style (B)	F0	White	Ø 18	IP40/IP65 TH465015000	IP65 with Sition cap TH465001000	IP67 TH565025000	For Aluminum Bezel only								
	F1	Yellow	Ø 18	TH465115000	TH465101000	TH565125000									
	F2	Green	Ø 18	TH465215000	TH465201000	TH565225000									
	F3	Blue	Ø 18	TH465315000	TH465301000	TH565325000									
	F4	Red	Ø 18	TH465415000	TH465401000	TH565425000									
	F6	Orange	Ø 18	TH465615000	TH465601000	TH565625000									
	Illumination	X	Non illuminated												
A		6V													
B		12V													
C		24V													
F		48V													
Illumination Color	X	Non illuminated													
	N	Incandescent lamp		6V, 200 mA TH590000000			12V, 80 mA TH590001000			24V, 50 mA TH590006000			48V, 25 mA TH590004000		
	1	Yellow LED		6V AC/DC, 45 mA TH590231000			12V AC/DC, 25 mA TH590234000			24V AC/DC, 12.5 mA TH590237000			48V AC/DC, 12.5 mA TH590240000		
	2	Green LED		TH590232000			TH590235000			TH590238000			TH590241000		
	4	Red LED		TH590230000			TH590233000			TH590236000			TH590239000		

TP5

Panel cut-out (mm) Ø 16.2 or Ø 22.5

- Characteristics
- momentary or latching
 - sealed IP40 or IP65
 - wide range of bezels
 - shallow mounting depth
 - with or without illumination
 - NO, NC
 - gold plated contact blocks

Rating 250 VAC, 5 A

Dimensions (mm) 18 × 24
18 × 18
Ø 18
Ø 25

Actuator ■ lenses in different shapes and colors

Approvals UL, CSA, VDE



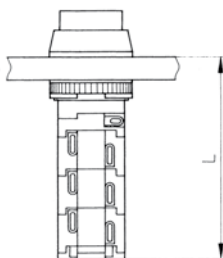
Popular Products

Ordering Reference	Panel cut-out	Function	Actuator style	Terminals	Electrical rating
TP51LAA2A4CN	Ø 16.2 mm	Latching; IP40	18 × 24 mm, red Illumination	Solder; gold	250 VAC, 5A
TP51LDA2D4CN	Ø 16.2 mm	Latching; IP40	Ø 18 mm, red Illumination	Solder; gold	250 VAC, 5A
TP51MAA2A4CN	Ø 16.2 mm	Momentary; IP40	18 × 24 mm, red Illumination	Solder; gold	250 VAC, 5A
TP51MDA2D4CN	Ø 16.2 mm	Momentary; IP40	Ø 18 mm, red Illumination	Solder; gold	250 VAC, 5A
TP52LFD2F4CN	Ø 22.5 mm	Latching; IP40	Ø 25 mm, red Illumination	Solder; gold	250 VAC, 5A
TP52MFD2F4CN	Ø 22.5 mm	Momentary; IP40	Ø 25 mm, green Illumination	Solder; gold	250 VAC, 5A

Specifications

Mechanism	Bi-functional – momentary or latching
Actuating force	Approximately 2.5N – 1 contact block
Mounting	Central fixing with metal lock nut
Protection	IP40, IP65
Bezel material	Thermoplastic or anodized aluminum alloy
Lens material	Polycarbonate – engravable
Illumination	T13/4 midjet grooved lamps – incandescent lamps , LEDs, multi LEDs 60 V, 1.2 W maximum Lamp contact "a" = cathode (-) Appropriate safety regulations should be respected when using the indicator light.
Temperature range °C	-30°C to +80°C
Mechanical life	10 ⁶ cycles
Contact block (blocks)	Supplied fitted
Contact block housing	Self-extinguishing duroplastic (UL 94 V0)
Terminal material	Silver alloy with 0.2 µm silver plating plus 0.4 µm gold plating
Contact resistance	< 30mOhm
Number of contact blocks	1 NO + 1 NC per contact block, up to a maximum of 3 contact blocks per switch
Terminals	Patented flexible solder - suitable for wire diameter 2 × 1.00 mm ² (braided), 4 × 0.75 mm (stranded)
Vibration resistance	1.5 mm pp amplitude at 55 Hz

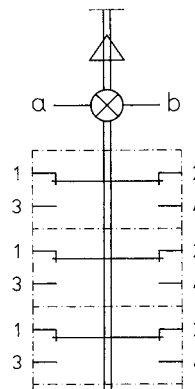
Dimensions



Length in mm (countersunk mounting version)

Panel cut-out	16.2 ±0.1	22.5 ±0.1
N° of contact blocks	1	2
2	27.5	26.5 (35.0)
3	36.0	35.0 (43.5)
	44.5	43.5 (52.0)

Circuit diagram (3 contact blocks)



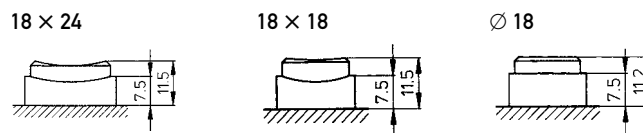
Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load (A)	Approval
250 VAC	5.0 (0.7 pf)		UL, CSA, VDE - max. admissible circuit breaker C6A
12 VDC	5.0	3.0	General rating
24 VDC	4.0	2.0	General rating
36 VDC	3.0	1.7	General rating
48 VDC	2.0	1.5	General rating
60 VDC	1.5	1.2	General rating
125 VDC	0.5	0.3	General rating
250 VDC	0.3	0.2	General rating

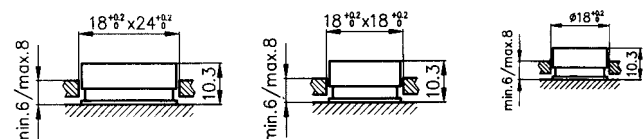
Electrical life 70,000 cycles at 5A, 250 VAC, 0.7 pf

Dimensions Plastic bezel and lens heights in mm (switch off position)

exposed version
Panel cut-out
 16.2 ± 0.1 mm

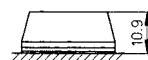


concealed version
Panel cut-out



Aluminum bezel Ø 25 and lens heights in mm (switch off position)

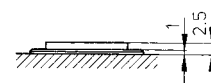
aluminum bezel
without sealing gasket (IP40)



aluminum bezel
with sealing gasket (IP65)



aluminum bezel
countersunk mounting (IP40)



Panel cut-out 22.5 ± 0.1 mm

Front panel thickness

plastic bezel

1.0 mm to 5.5 mm

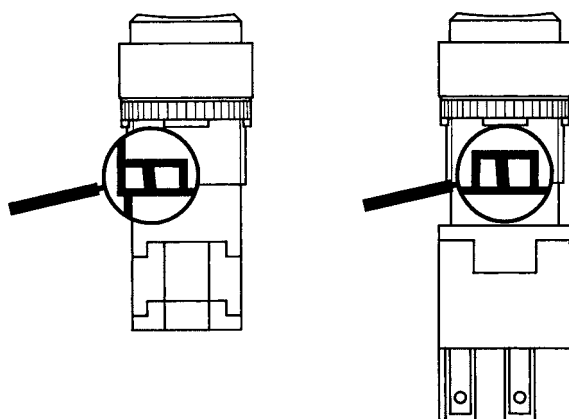
aluminum bezel 1.0 mm to 5.0 mm

countersunk mounting 2.0 mm to 20.0 mm

Bi-functional selection

All latching switches in the range incorporate a simple selector mechanism for modifying the function of the switch.

This function is not available with momentary or interlocking switches.



Application:

When the switch is in the off position the selector mechanism can be moved to the right to obtain a momentary function, or to the left to return to a latching function.

Ordering Reference

Basic type		TP5				Example: TP5		1	MAA0	A0	A	N
Panel cut-out		1 Ø 16.2 mm										
Switch body (A)	Function		Actuator	Housing (plastic)		Contact blocks	Part No.					
	MAA0	Momentary	18 × 24 mm	Exposed; IP40; solder		None	TH500008000					
	MAA1	Momentary	18 × 24 mm	Exposed; IP40; solder		1 NO + 1 NC	TH500108000					
	MAA2	Momentary	18 × 24 mm	Exposed; IP40; solder		2 NO + 2 NC	TH500208000					
	MAA3	Momentary	18 × 24 mm	Exposed; IP40; solder		3 NO + 3 NC	TH500308000					
	LAA0	Latching	18 × 24 mm	Exposed; IP40; solder		None	TH510008000					
	LAA1	Latching	18 × 24 mm	Exposed; IP40; solder		1 NO + 1 NC	TH510108000					
	LAA2	Latching	18 × 24 mm	Exposed; IP40; solder		2 NO + 2 NC	TH510208000					
	LAA3	Latching	18 × 24 mm	Exposed; IP40; solder		3 NO + 3 NC	TH510308000					
	MAB0	Momentary	18 × 24 mm	Concealed; IP40; solder		None	TH500002000					
	MAB1	Momentary	18 × 24 mm	Concealed; IP40; solder		1 NO + 1 NC	TH500102000					
	MAB2	Momentary	18 × 24 mm	Concealed; IP40; solder		2 NO + 2 NC	TH500202000					
	MAB3	Momentary	18 × 24 mm	Concealed; IP40; solder		3 NO + 3 NC	TH500302000					
	LAB0	Latching	18 × 24 mm	Concealed; IP40; solder		None	TH510002000					
	LAB1	Latching	18 × 24 mm	Concealed; IP40; solder		1 NO + 1 NC	TH510102000					
	LAB2	Latching	18 × 24 mm	Concealed; IP40; solder		2 NO + 2 NC	TH510202000					
	LAB3	Latching	18 × 24 mm	Concealed; IP40; solder		3 NO + 3 NC	TH510302000					
Switch body (B)	MBA0	Momentary	18 × 18 mm	Exposed; IP40; solder		None	TH502008000					
	MBA1	Momentary	18 × 18 mm	Exposed; IP40; solder		1 NO + 1 NC	TH502108000					
	MBA2	Momentary	18 × 18 mm	Exposed; IP40; solder		2 NO + 2 NC	TH502208000					
	MBA3	Momentary	18 × 18 mm	Exposed; IP40; solder		3 NO + 3 NC	TH502308000					
	LBA0	Latching	18 × 18 mm	Exposed; IP40; solder		None	TH512008000					
	LBA1	Latching	18 × 18 mm	Exposed; IP40; solder		1 NO + 1 NC	TH512108000					
	LBA2	Latching	18 × 18 mm	Exposed; IP40; solder		2 NO + 2 NC	TH512208000					
	LBA3	Latching	18 × 18 mm	Exposed; IP40; solder		3 NO + 3 NC	TH512308000					
	MBB0	Momentary	18 × 18 mm	Concealed; IP40; solder		None	TH502002000					
	MBB1	Momentary	18 × 18 mm	Concealed; IP40; solder		1 NO + 1 NC	TH502102000					
	MBB2	Momentary	18 × 18 mm	Concealed; IP40; solder		2 NO + 2 NC	TH502202000					
	MBB3	Momentary	18 × 18 mm	Concealed; IP40; solder		3 NO + 3 NC	TH502302000					
	LBB0	Latching	18 × 18 mm	Concealed; IP40; solder		None	TH512002000					
	LBB1	Latching	18 × 18 mm	Concealed; IP40; solder		1 NO + 1 NC	TH512102000					
	LBB2	Latching	18 × 18 mm	Concealed; IP40; solder		2 NO + 2 NC	TH512202000					
	LBB3	Latching	18 × 18 mm	Concealed; IP40; solder		3 NO + 3 NC	TH512302000					
Switch body (C)	MDA0	Momentary	Ø 18 mm	Exposed; IP40; solder		None	TH504008000					
	MDA1	Momentary	Ø 18 mm	Exposed; IP40; solder		1 NO + 1 NC	TH504108000					
	MDA2	Momentary	Ø 18 mm	Exposed; IP40; solder		2 NO + 2 NC	TH504208000					
	MDA3	Momentary	Ø 18 mm	Exposed; IP40; solder		3 NO + 3 NC	TH504308000					
	LDA0	Latching	Ø 18 mm	Exposed; IP40; solder		None	TH514008000					
	LDA1	Latching	Ø 18 mm	Exposed; IP40; solder		1 NO + 1 NC	TH514108000					
	LDA2	Latching	Ø 18 mm	Exposed; IP40; solder		2 NO + 2 NC	TH514208000					
	LDA3	Latching	Ø 18 mm	Exposed; IP40; solder		3 NO + 3 NC	TH514308000					
	MDB0	Momentary	Ø 18 mm	Concealed; IP40; solder		None	TH504002000					
	MDB1	Momentary	Ø 18 mm	Concealed; IP40; solder		1 NO + 1 NC	TH504102000					
	MDB2	Momentary	Ø 18 mm	Concealed; IP40; solder		2 NO + 2 NC	TH504202000					
	MDB3	Momentary	Ø 18 mm	Concealed; IP40; solder		3 NO + 3 NC	TH504302000					
	LDB0	Latching	Ø 18 mm	Concealed; IP40; solder		None	TH514002000					
	LDB1	Latching	Ø 18 mm	Concealed; IP40; solder		1 NO + 1 NC	TH514102000					
	LDB2	Latching	Ø 18 mm	Concealed; IP40; solder		2 NO + 2 NC	TH514202000					
	LDB3	Latching	Ø 18 mm	Concealed; IP40; solder		3 NO + 3 NC	TH514302000					
Transparent Lens For Switch body style (A)	A0	White	Exposed 15 × 21 mm	Exposed TH461021000		Concealed 18 × 24 mm	Concealed TH461017000					
	A1	Yellow	15 × 21 mm	TH461121000		18 × 24 mm	TH461117000					
	A2	Green	15 × 21 mm	TH461221000		18 × 24 mm	TH461217000					
	A3	Blue	15 × 21 mm	TH461321000		18 × 24 mm	TH461317000					
	A4	Red	15 × 21 mm	TH461421000		18 × 24 mm	TH461417000					
	A6	Orange	15 × 21 mm	TH461621000		18 × 24 mm	TH461617000					
For Switch body style (B)	B0	White	15 × 15 mm	TH463021000		18 × 18 mm	TH463018000					
	B1	Yellow	15 × 15 mm	TH463121000		18 × 18 mm	TH463118000					
	B2	Green	15 × 15 mm	TH463221000		18 × 18 mm	TH463218000					
	B3	Blue	15 × 15 mm	TH463321000		18 × 18 mm	TH463318000					
	B4	Red	15 × 15 mm	TH463421000		18 × 18 mm	TH463418000					
	B6	Orange	15 × 15 mm	TH463621000		18 × 18 mm	TH463618000					
For Switch body style (C)	D0	White	Ø 15 mm	TH465021000		Ø 18 mm	TH465015000					
	D1	Yellow	Ø 15 mm	TH465121000		Ø 18 mm	TH465115000					
	D2	Green	Ø 15 mm	TH465221000		Ø 18 mm	TH465215000					
	D3	Blue	Ø 15 mm	TH465321000		Ø 18 mm	TH465315000					
	D4	Red	Ø 15 mm	TH465421000		Ø 18 mm	TH465415000					
	D6	Orange	Ø 15 mm	TH465621000		Ø 18 mm	TH465615000					
Illumination	X	Non illuminated										
	A	6V										
	B	12V										
	C	24V										
	F	48V										
Illumination Color	X	Non illuminated										
	N	Incandescent lamp	6V, 200 mA TH590000000	12V, 80 mA TH590001000	24V, 50 mA TH590006000	48V, 25 mA TH590004000						
	1	Yellow LED	6V AC/DC, 45 mA TH590231000	12V AC/DC, 25 mA TH590234000	24V AC/DC, 12.5 mA TH590237000	48V AC/DC, 12.5 mA TH590240000						
	2	Green LED	TH590232000	TH590235000	TH590238000	TH590241000						
4	Red LED	TH590230000	TH590233000	TH590236000	TH590239000							

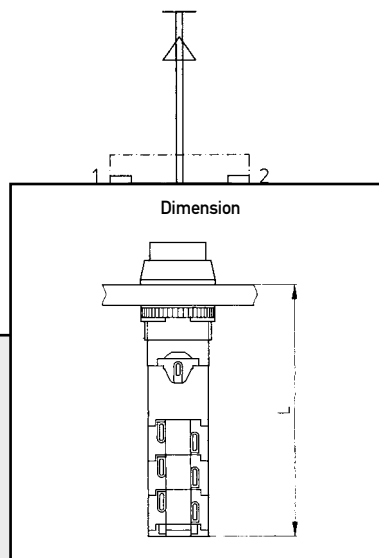
Ordering Reference

Basic type	TP5					Example: TP5					2	MFC0	F0	A	N
Panel cut-out	2 Ø 22.5 mm														
Switch body	Function	Actuator	Housing (Aluminum)			Contact blocks	Part No.								
	MFC0 Momentary	Ø 25 mm	Exposed Aluminum; IP40 / IP65*; solder			None	TH504018000								
	MFC1 Momentary	Ø 25 mm	Exposed Aluminum; IP40 / IP65*; solder			1 NO + 1 NC	TH504118000								
	MFC2 Momentary	Ø 25 mm	Exposed Aluminum; IP40 / IP65*; solder			2 NO + 2 NC	TH504218000								
	MFC3 Momentary	Ø 25 mm	Exposed Aluminum; IP40 / IP65*; solder			3 NO + 3 NC	TH504318000								
	LFC0 Latching_	Ø 25 mm	Exposed Aluminum; IP40 / IP65*; solder			None	TH514018000								
	LFC1 Latching_	Ø 25 mm	Exposed Aluminum; IP40 / IP65*; solder			1 NO + 1 NC	TH514118000								
	LFC2 Latching_	Ø 25 mm	Exposed Aluminum; IP40 / IP65*; solder			2 NO + 2 NC	TH514218000								
	LFC3 Latching_	Ø 25 mm	Exposed Aluminum; IP40 / IP65*; solder			3 NO + 3 NC	TH514318000								
	MFD0 Momentary	Ø 25 mm	Flush Aluminum; IP40; solder			None	TH504050000								
	MFD1 Momentary	Ø 25 mm	Flush Aluminum; IP40; solder			1 NO + 1 NC	TH504150000								
	MFD2 Momentary	Ø 25 mm	Flush Aluminum; IP40; solder			2 NO + 2 NC	TH504250000								
	MFD3 Momentary	Ø 25 mm	Flush Aluminum; IP40; solder			3 NO + 3 NC	TH504350000								
	LFD0 Latching_	Ø 25 mm	Flush Aluminum; IP40; solder			None	TH514050000								
	LFD1 Latching_	Ø 25 mm	Flush Aluminum; IP40; solder			1 NO + 1 NC	TH514150000								
	LFD2 Latching_	Ø 25 mm	Flush Aluminum; IP40; solder			2 NO + 2 NC	TH514250000								
	LFD3 Latching_	Ø 25 mm	Flush Aluminum; IP40; solder			3 NO + 3 NC	TH514350000								
	MFK0 Momentary	Ø 25 mm	Exposed Aluminum with silicon cap;IP65*; solder			None	TH504033000								
	MFK1 Momentary	Ø 25 mm	Exposed Aluminum with silicon cap;IP65*; solder			1 NO + 1 NC	TH504133000								
	MFK2 Momentary	Ø 25 mm	Exposed Aluminum with silicon cap;IP65*; solder			2 NO + 2 NC	TH504233000								
	MFK3 Momentary	Ø 25 mm	Exposed Aluminum with silicon cap;IP65*; solder			3 NO + 3 NC	TH504333000								
	LFK0 Latching_	Ø 25 mm	Exposed Aluminum with silicon cap;IP65*; solder			None	TH514033000								
	LFK1 Latching_	Ø 25 mm	Exposed Aluminum with silicon cap;IP65*; solder			1 NO + 1 NC	TH514133000								
	LFK2 Latching_	Ø 25 mm	Exposed Aluminum with silicon cap;IP65*; solder			2 NO + 2 NC	TH514233000								
	LFK3 Latching_	Ø 25 mm	Exposed Aluminum with silicon cap;IP65*; solder			3 NO + 3 NC	TH514333000								
Lens, transparent	F0	White	Ø 18				IP40/IP65	IP65 with sealing ring							
	F1	Yellow	Ø 18				TH465015000	TH465001000							
	F2	Green	Ø 18				TH465115000	TH465101000							
	F3	Blue	Ø 18				TH465215000	TH465201000							
	F4	Red	Ø 18				TH465315000	TH465301000							
	F6	Orange	Ø 18				TH465415000	TH465401000							
Illumination	X	Non illuminated													
	A	6V													
	B	12V													
	C	24V													
Illumination Color	F	48V													
	N	Non illuminated													
		Incandescent lamp													
							6V, 200 mA	12V, 80 mA		24V, 50 mA	48V, 25 mA				
							TH590000000	TH59001000		TH590006000	TH590004000				
							6V AC/DC, 45 mA	12V AC/DC, 25 mA		24V AC/DC, 12.5 mA	48V AC/DC, 12.5 mA				
	1	Yellow LED					TH590231000	TH590234000		TH590237000	TH590240000				
	2	Green LED					TH590232000	TH590235000		TH590238000	TH590241000				
4	Red LED					TH590230000	TH590233000		TH590236000	TH590239000					

Assembled Push Button



Circuit diagrams (3 contact blocks)



TP4

Panel cut-out (mm) Ø 16.2 or Ø 22.5

Characteristics

- mushroom
- momentary or latching
- sealed IP40 or IP65
- wide range of bezels
- NO, NC
- gold plated contact blocks

Rating 250 VAC, 5 A

Dimensions (mm)

18 × 24
24 × 24
Ø 24
Ø 30

Actuator ■ mushroom cap in different shapes and colors

Approvals UL, CSA, VDE



Assembled Push Button

Popular products

Ordering Reference	Panel cut-out (mm)	Function	Actuator size (mm)	Actuator style	Environmental protection	Terminals	Electrical rating
TP41LAJ2A4NXX	Ø 16.2	Latching	18 × 24	mushroom, red	IP40	Solder	250 VAC, 5A
TP41LEJ2E4NXX	Ø 16.2	Latching	Ø 24	mushroom, red	IP40	Solder	250 VAC, 5A
TP41MAJ2A4NXX	Ø 16.2	Momentary	18 × 24	mushroom, red	IP40	Solder	250 VAC, 5A
TP41MEJ2E4NXX	Ø 16.2	Momentary	Ø 24	mushroom, red	IP40	Solder	250 VAC, 5A
TP42LHJ2H4NXX	Ø 22.5	Latching	Ø 30	mushroom, red	IP65	Solder	250 VAC, 5A
TP42MHJ2H4NXX	Ø 22.5	Momentary	Ø 30	mushroom, red	IP65	Solder	250 VAC, 5A

Specifications

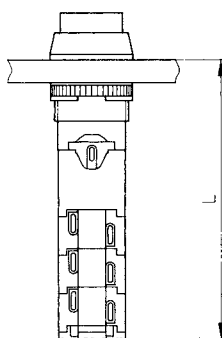
Mechanism	Momentary or latching
Actuating force	Approximately 2.5N – 1 contact block
Mounting	Central fixing with metal lock nut
Protection	IP40, IP65
Bezel material	Thermoplastic or anodized aluminum alloy
Lens material	Polycarbonate – engravable
Illumination	Non-illuminated
Temperature range °C	-30°C to +80°C
Mechanical life	10 ⁶ cycles
Contact block (blocks)	Supplied fitted
Contact block housing	Self-extinguishing duroplastic (UL 94 V0)
Terminal material	Silver alloy with 0.2 µm silver plating, plus 0.4 µm gold plating
Contact resistance	< 30mOhm
Number of contact blocks	1 NO + 1 NC per contact block, up to a maximum of 3 contact blocks per switch
Terminals	Patented flexible solder - suitable for wire diameter 2 × 1.00 mm ² (braided), 4 × 0.75 mm (stranded)
Vibration resistance	1.5mm pp amplitude at 55 Hz

Recommended maximum electrical ratings

Voltage (max) 250 VAC	Resistive load (A) 5.0 (0.7 pf)	Inductive load (A)	Approval UL, CSA, VDE - max. admissible circuit breaker C6A
12 VDC	5.0	3.0	General rating
24 VDC	4.0	2.0	General rating
36 VDC	3.0	1.7	General rating
48 VDC	2.0	1.5	General rating
60 VDC	1.5	1.2	General rating
125 VDC	0.5	0.3	General rating
250 VDC	0.3	0.2	General rating

Electrical life 70,000 cycles at 5A, 250 VAC, 0.7 pf

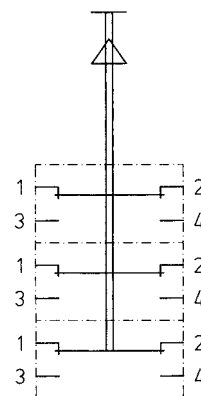
Dimensions



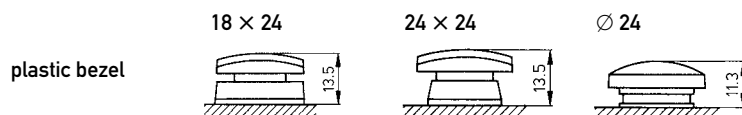
Length in mm

Panel cut-out	16.2 ±0.1	22.5 ±0.1
N° of contact blocks		
1	44.5	43.5
2	53.0	52.0
3	61.5	60.5

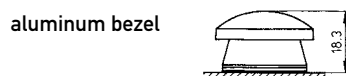
Circuit diagrams (3 contact blocks)



Bezel and lens heights in mm (switch off position)



panel cut-out 16.2 ± 0.1 mm



panel cut-out 22.5 mm

Front panel thickness 1.0 mm to 10 mm (Aluminum bezel 1.0 mm to 6.5 mm)

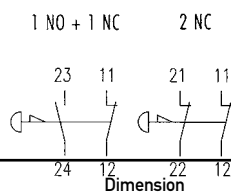
Ordering Reference

Basic type	TP4						Example: TP4	1	MAJ0	A0	N	X	X
Panel cut-out	1	Ø 16.2 mm	Switch body 18 × 24; 24 × 24; Ø 24										
	2	Ø 22.5 mm	Switch body Ø 30 only										
		Function	Actuator style	Environmental protection	Contact blocks	Part No.							
Switch body	MAJ0	Momentary	18 × 24 mm	IP40	None	TH400004							
Panel cut-out 16.2 mm (A)	MAJ1	Momentary	18 × 24 mm	IP40	1NO + 1NC	TH400104							
	MAJ2	Momentary	18 × 24 mm	IP40	2 NO + 2 NC	TH400204							
	MAJ3	Momentary	18 × 24 mm	IP40	3 NO + 3 NC	TH400304							
	LAJ0	Latching	18 × 24 mm	IP40	None	TH410004							
	LAJ1	Latching	18 × 24 mm	IP40	1NO + 1NC	TH410104							
	LAJ2	Latching	18 × 24 mm	IP40	2 NO + 2 NC	TH410204							
	LAJ3	Latching	18 × 24 mm	IP40	3 NO + 3 NC	TH410304							
Panel cut-out 16.2 mm (B)	MCJ0	Momentary	24 × 24 mm	IP40	None	TH402004							
	MCJ1	Momentary	24 × 24 mm	IP40	1NO + 1NC	TH402104							
	MCJ2	Momentary	24 × 24 mm	IP40	2 NO + 2 NC	TH402204							
	MCJ3	Momentary	24 × 24 mm	IP40	3 NO + 3 NC	TH402304							
	LCJ0	Latching	24 × 24 mm	IP40	None	TH412004							
	LCJ1	Latching	24 × 24 mm	IP40	1NO + 1NC	TH412104							
	LCJ2	Latching	24 × 24 mm	IP40	2 NO + 2 NC	TH412204							
	LCJ3	Latching	24 × 24 mm	IP40	3 NO + 3 NC	TH412304							
Panel cut-out 16.2 mm (C)	MEJ0	Momentary	Ø 24	IP40	None	TH404004							
	MEJ1	Momentary	Ø 24	IP40	1NO + 1NC	TH404104							
	MEJ2	Momentary	Ø 24	IP40	2 NO + 2 NC	TH404204							
	MEJ3	Momentary	Ø 24	IP40	3 NO + 3 NC	TH404304							
	LEJ0	Latching	Ø 24	IP40	None	TH414004							
	LEJ1	Latching	Ø 24	IP40	1NO + 1NC	TH414104							
	LEJ2	Latching	Ø 24	IP40	2 NO + 2 NC	TH414204							
	LEJ3	Latching	Ø 24	IP40	3 NO + 3 NC	TH414304							
Panel cut-out 22.5 mm	MHJ0	Momentary	Ø 30	IP65	None	TH404019							
	MHJ1	Momentary	Ø 30	IP65	1NO + 1NC	TH404119							
	MHJ2	Momentary	Ø 30	IP65	2 NO + 2 NC	TH404219							
	MHJ3	Momentary	Ø 30	IP65	3 NO + 3 NC	TH404319							
	LHJ0	Latching	Ø 30	IP65	None	TH414019							
	LHJ1	Latching	Ø 30	IP65	1NO + 1NC	TH414119							
	LHJ2	Latching	Ø 30	IP65	2 NO + 2 NC	TH414219							
	LHJ3	Latching	Ø 30	IP65	3 NO + 3 NC	TH414319							
Panel cut out 16.2 Actuator color For Switch body (A)	A0	White	18 × 24 mm	Mushroom	THXXXXXX WHT								
	A1	Yellow	18 × 24 mm	Mushroom	THXXXXXX YEL								
	A2	Green	18 × 24 mm	Mushroom	THXXXXXX GRN								
	A3	Blue	18 × 24 mm	Mushroom	THXXXXXX BLU								
	A4	Red	18 × 24 mm	Mushroom	THXXXXXX RED								
	A5	Black	18 × 24 mm	Mushroom	THXXXXXX BLK								
For Switch body style (B)	C0	White	24 × 24 mm	Mushroom	THXXXXXX WHT								
	C1	Yellow	24 × 24 mm	Mushroom	THXXXXXX YEL								
	C2	Green	24 × 24 mm	Mushroom	THXXXXXX GRN								
	C3	Blue	24 × 24 mm	Mushroom	THXXXXXX BLU								
	C4	Red	24 × 24 mm	Mushroom	THXXXXXX RED								
	C5	Black	24 × 24 mm	Mushroom	THXXXXXX BLK								
For Switch body style (C)	E0	White	Ø 24 mm	Mushroom	THXXXXXX WHT								
	E1	Yellow	Ø 24 mm	Mushroom	THXXXXXX YEL								
	E2	Green	Ø 24 mm	Mushroom	THXXXXXX GRN								
	E3	Blue	Ø 24 mm	Mushroom	THXXXXXX BLU								
	E4	Red	Ø 24 mm	Mushroom	THXXXXXX RED								
	E5	Black	Ø 24 mm	Mushroom	THXXXXXX BLK								
Panel cut-out 22.5	H0	White	Ø 30 mm	Mushroom	THXXXXXX WHT								
	H1	Yellow	Ø 30 mm	Mushroom	THXXXXXX YEL								
	H2	Green	Ø 30 mm	Mushroom	THXXXXXX GRN								
	H3	Blue	Ø 30 mm	Mushroom	THXXXXXX BLU								
	H4	Red	Ø 30 mm	Mushroom	THXXXXXX RED								
	H5	Black	Ø 30 mm	Mushroom	THXXXXXX BLK								
Housing Color	N	Natural											
Illumination	X	Non illuminated											
Illumination color	X	Non illuminated											

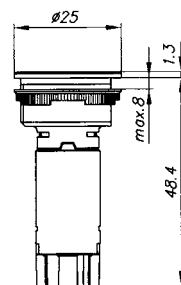
Assembled Push Button



Circuit diagram



Dimension



TP8

Panel cut-out (mm)	Ø 22.5
Characteristics	- momentary - sealed IP67 - round metal bezels 1 NO + 1 NC, 2 NC, 2 NO - gold plated contact block
Rating	230 VAC, 6 A
Dimensions (mm)	Ø 25
Actuator	button and housing in different colors
Approvals	none



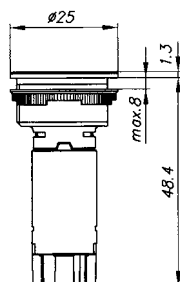
Popular products

Ordering Reference	Panel cut-out (mm)	Function	Actuator style	Terminals (mm)	Electrical rating
TP82MDOA30	Ø 22.5	Momentary	Non-illuminated Natural Aluminum	2.8 × 0.5 Faston	230 VAC 6 A

Specifications

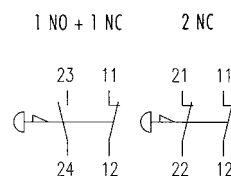
Mechanism	Momentary positive action with wiping contacts
Contact gap	>3 mm
Actuating force	Approximately 6.0N
Mounting	Central fixing with metal lock nut
Protection	IP67
Housing and actuator material	Anodised aluminum or stainless steel (upon request) Non-illuminated
Temperature range °C	-25°C to +55°C
Contact block	Supplied fitted
Contact block housing	Thermoplastic
Terminal material	Silver nickel with 0.4 µm gold plating
Contact resistance	<30mOhm
Number of contact blocks	1 NO + 1 NC or 2 NC or 2 NO (independent circuits)
Terminals	Faston - 2.8 mm × 0.5 mm, to DIN 46247

Dimensions



Panel cut-out 22.5 ± 0.1 mm

Circuit diagram



Recommended maximum electrical ratings

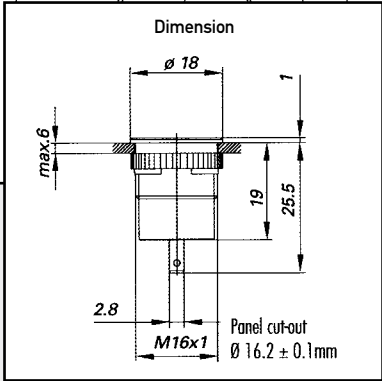
Voltage (max) 230 VAC	Resistive load (A) 6.0	Inductive load (A)	Approval IEC 947-5-1, AC15 – recommended circuit breaker C6A
Electrical life	20,000 cycles at 10A, 24V, DC13		
	50,000 cycles at 5A, 24V, DC13		
	100,000 cycles at 5A, 12V, DC13		
	50,000 cycles at 6A, 250V, AC12		
	300,000 cycles at 2.5A, 250V, AC12		

Ordering Reference

Basic type	TP8	Example: TP8 2 MD0A 3 0			
Panel cut-out	2 Ø 22.5 mm				
Switch body	MD0A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum natural; faston 2.8 mm × 0.5 mm	TH80750	X	00	X
	MD1A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum yellow; faston 2.8 mm × 0.5 mm	TH80750	X	10	X
	MD2A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum green; faston 2.8 mm × 0.5 mm	TH80750	X	20	X
	MD4A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum red; faston 2.8 mm × 0.5 mm	TH80750	X	40	X
	MD5A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum black; faston 2.8 mm × 0.5 mm	TH80750	X	50	X
	MD8A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum dark blue; faston 2.8 mm × 0.5 mm	TH80750	X	80	X
Contact (X)	3 Contact Block 1NO+1NC				
	4 Contact Block 2NC				
	5 Contact Block 2NO				
Actuator color (X)	0 Neutral				
	1 Yellow				
	2 Green				
	4 Red				
	5 Black				
	8 Dark blue				

Note: Stainless steel versions available upon request.

Short stroke Push Button



TP9

Panel cut-out (mm)	Ø 16.2 or Ø 22.5
Characteristics	- momentary short stroke switch - sealed IP65 or IP67 - round metal bezels - NO - snap-in mounting option Ø 22.5 mm (IP65 only)
Rating	50 VAC/VDC, 50 mA
Dimensions (mm)	Ø 18 Ø 25
Actuator	button and housing in different colors
Approvals	none



Popular products

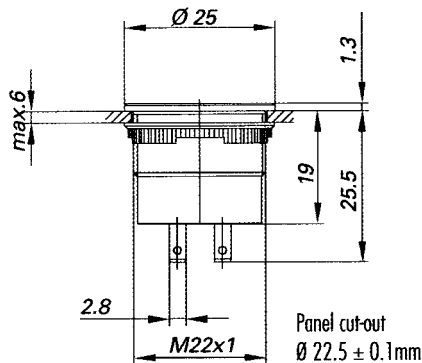
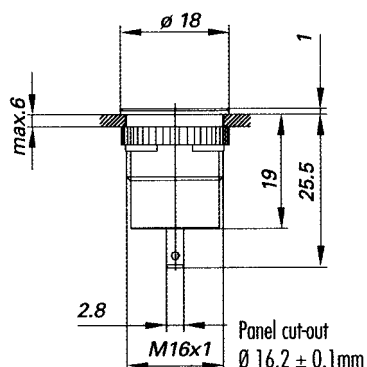
Ordering Reference	Panel cut-out (mm)	Function	Actuator size (mm)	Actuator style	Environmental protection	Terminals (mm)	Electrical rating
TP92MFOA000	Ø 22.5	Momentary 1NO	Ø 25	Non-illuminated natural aluminum	IP67	2.8 × 0.5 faston	50 VAC/VDC, 50 mA
TP92MFOA002	Ø 22.5	Momentary 1NO	Ø 25	Non-illuminated green anodised aluminum	IP67	2.8 × 0.5 faston	50 VAC/VDC, 50 mA
TP92MFOA004	Ø 22.5	Momentary 1NO	Ø 25	Non-illuminated red anodised aluminum	IP67	2.8 × 0.5 faston	50 VAC/VDC, 50 mA
TP92MFOA005	Ø 22.5	Momentary 1NO	Ø 25	Non-illuminated black anodised aluminum	IP67	2.8 × 0.5 faston	50 VAC/VDC, 50 mA

Specifications

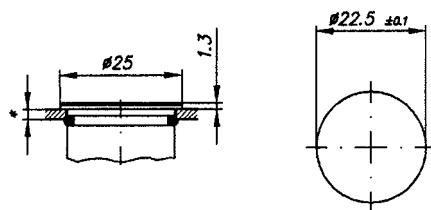
Mechanism	Momentary with 1mm short-stroke action
Actuating force	3.5N maximum
Mounting	Central fixing with metal lock nut or front assembly snap-in
Protection	IP65 (snap-in) or IP67 (lock nut)
Housing and actuator material	Anodised aluminum or stainless steel (upon request)
Illumination	Non-illuminated versions available only
Temperature range °C	-30°C to +70°C
Mechanical life	>200,000 (18 mm switch), >500,000 (25 mm switch)
Number of contact blocks	1 NO
Terminals	Faston – 2.8 mm × 0.5 mm

TP9

Dimensions Locknut mounting



Snap-in mounting



Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)
50 VAC	50 mA

Ordering Reference

Basic type	TP9	Example: TP9	1	MD0A	00
Panel cut-out	1	Ø 16.2mm			
Switch body	MD0A	Ø 18 mm Momentary switch IP67; 1NO; Flush Aluminum natural; faston 2.8mm × 0.5mm	TH921000	XX3	
	MD1A	Ø 18 mm Momentary switch IP67; 1NO; Flush Aluminum yellow; faston 2.8mm × 0.5mm	TH921001	XX3	
	MD2A	Ø 18 mm Momentary switch IP67; 1NO; Flush Aluminum green; faston 2.8mm × 0.5mm	TH921002	XX3	
	MD4A	Ø 18 mm Momentary switch IP67; 1NO; Flush Aluminum red; faston 2.8mm × 0.5mm	TH921004	XX3	
	MD5A	Ø 18 mm Momentary switch IP67; 1NO; Flush Aluminum black; faston 2.8mm × 0.5mm	TH921005	XX3	
	MD8A	Ø 18 mm Momentary switch IP67; 1NO; Flush Aluminum dark blue; faston 2.8mm × 0.5mm	TH921008	XX3	
Actuator Color (XX)	00	Neutral			
	01	Yellow			
	02	Green			
	04	Red			
	05	Black			
	08	Dark blue			

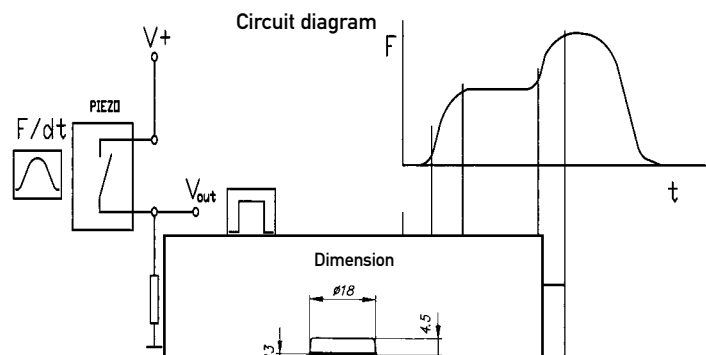
Stainless steel actuator and body styles, available upon request.

Ordering Reference

Basic type	TP9	Example: TP9 2 MF0A 0 00			
Panel cut-out	2 Ø 22.5 mm				
Switch body	MF0A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum natural; faston 2.8mm × 0.5mm	TH920	X00	XX1	
	MF1A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum yellow; faston 2.8mm × 0.5mm	TH920	X01	XX1	
	MF2A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum green; faston 2.8mm × 0.5mm	TH920	X02	XX1	
	MF4A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum red; faston 2.8mm × 0.5mm	TH920	X04	XX1	
	MF5A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum black; faston 2.8mm × 0.5mm	TH920	X05	XX1	
	MF8A Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminum dark blue; faston 2.8mm × 0.5mm	TH920	X08	XX1	
Mounting (X)	0 Locknut (IP67)				
	4 Snap-in-mounting 1.5mm - 2.0 mm panel thickness IP65 only				
	5 Snap-in-mounting 2.0mm - 2.5 mm panel thickness IP65 only				
	6 Snap-in-mounting 2.5mm - 3.0 mm panel thickness IP65 only				
Actuator color (XX)	00 Neutral				
	01 Yellow				
	02 Green				
	04 Red				
	05 Black				
	08 Dark blue				

Stainless steel actuator and body styles, available upon request.

Piezo Push Button



TP7

Panel cut-out (mm) Ø 16.2, Ø 22.5, Ø 30.3, Ø 43.3

- Characteristics
- piezo technology
 - momentary
 - sealed IP68
 - with or without illumination, two colors
 - solid state output
 - NO

Rating 3 to 35 VAC/VDC, 200 mA

Dimensions (mm)

- Ø 18
- Ø 25
- Ø 36
- Ø 48

Actuator ■ housing in different colors

Approvals none



Popular products

Ordering Reference	Panel cut-out (mm)	Function	Actuator size (mm)	Actuator style	Environmental protection	Terminals	Electrical rating
TP71MD1B04XX	Ø 16.2	Momentary 1NO	Ø 18	Non-illuminated, red anodised aluminum	IP68	Prewired	35 VAC/VDC max, 200 mA
TP71MD1B02XX	Ø 16.2	Momentary 1NO	Ø 18	Non-illuminated, green anodised aluminum	IP68	Prewired	35 VAC/VDC max, 200 mA
TP71MD1B05XX	Ø 16.2	Momentary 1NO	Ø 18	Non-illuminated, black anodised aluminum	IP68	Prewired	35 VAC/VDC max, 200 mA
TP71MD1B00XX	Ø 16.2	Momentary 1NO	Ø 18	Non-illuminated, natural aluminum	IP68	Prewired	35 VAC/VDC max, 200 mA
TP72MF1B00XX	Ø 22.5	Momentary 1NO	Ø 25	Non-illuminated, natural aluminum	IP68	Prewired	35 VAC/VDC max, 200 mA
TP72MG4B00C2	Ø 22.5	Momentary 1NO	Ø 25	Green illumination natural aluminum	IP68	Molex style 5 pin	35 VAC/VDC max, 200 mA
TP72MG2B00C4	Ø 22.5	Momentary 1NO	Ø 25	Red illumination natural aluminum	IP68	Molex style 5 pin	35 VAC/VDC max, 200 mA

Specifications

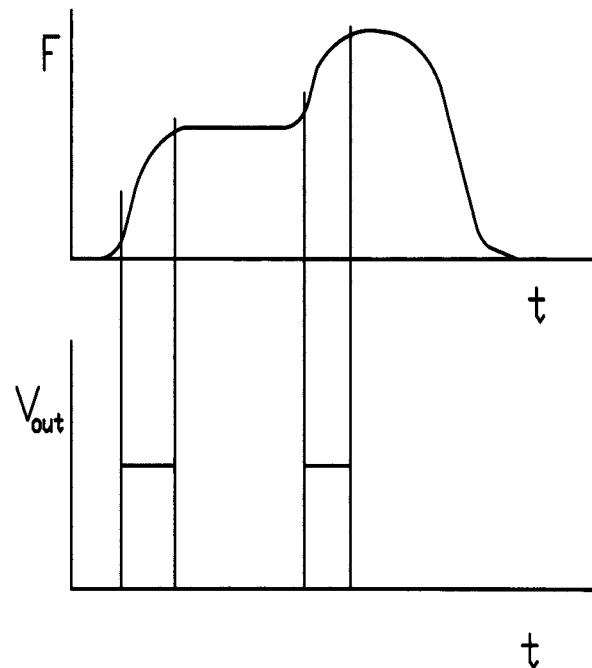
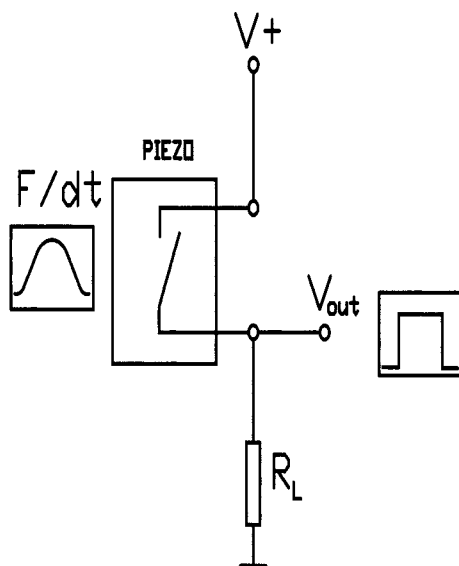
Mechanism	Piezo electronic, without auxilliary energy
Actuating force	5N maximum at an actuating speed 500 to 1500 mm/s
Closing impulse duration	10 to 1000 m/s - dependent on force and speed of actuation
Mounting	Central fixing from the rear with metal lock nut
Protection	IP68 (after installation)
Housing and actuator material	Anodised aluminum and stainless steel
Illumination	LED (18mm switch non-illuminated only)
Temperature range °C	-40°C to +105°C (non-illuminated), -40°C to +85°C (illuminated)
Life expectancy	>15 × 10 ⁶ cycles
Contact resistance	<10 Ohm (on)
Insulation resistance	>5M0hm (off)
Terminals	Prewired; 2.8mm × 0.8mm faston; Molex-style 3,5 & 6 pin; AMP-style 4 pin
Power consumption (illuminated types)	red or green: 12V IP = 40 mA 24V IF = 20 mA red/green: 12V IP = 2 × 20 mA 24V IF = 2 × 20 mA

Technical information

The piezo sensor converts pressure into voltage signals. These analogue voltage signals are then processed within the switch to form switching signals, using field effect transistors (FET).

Due to the internal resistor, the circuit state is dependent upon actuating force and speed, means of operation and the discharge time of the R-C system. Standard digital or relay technology can be employed to create individual timed delay, flip-flop and power amplification circuits.

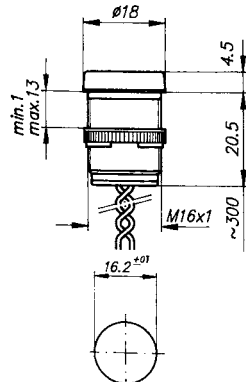
The circuit state diagram shows the approximate relationship between the force/time curve to the voltage circuit state:



Recommended maximum electrical ratings

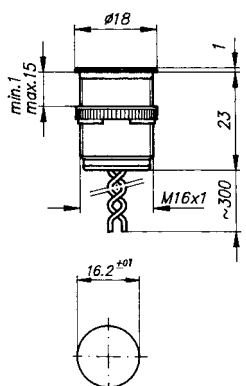
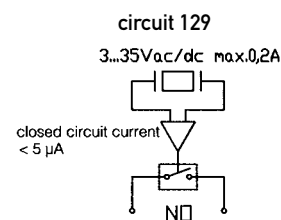
Voltage (max)	Resistive load (A)
3 to 35 VUC	0.2 A (0.7 pf)

Dimensions Non-illuminated

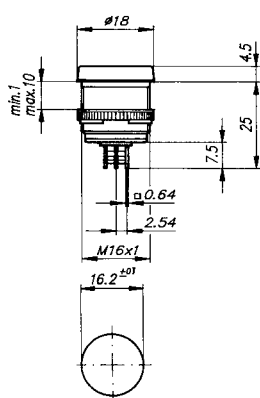
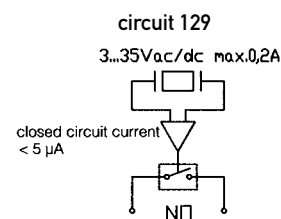


Ø 18, raised housing, prewired

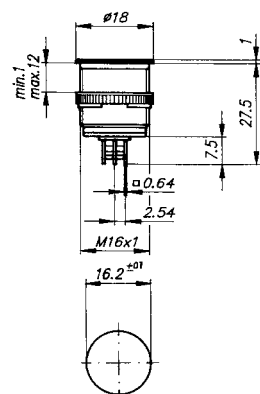
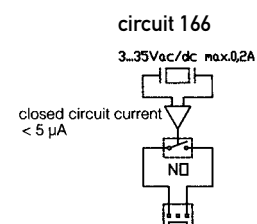
Circuit diagram



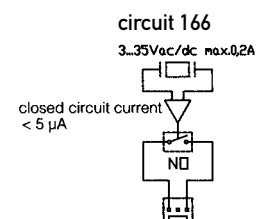
Ø 18, flush housing, prewired



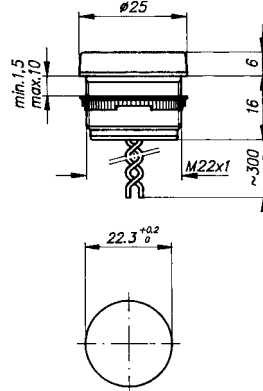
Ø 18, raised housing, Molex-style 3 pin



Ø 18, flush housing, Molex-style 3 pin

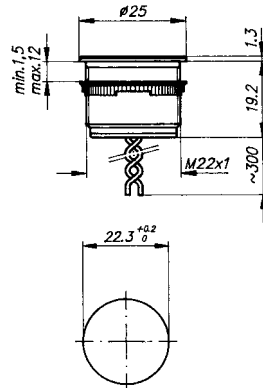
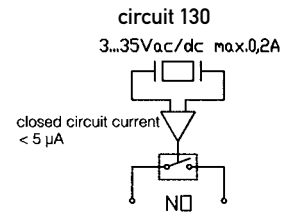


Dimensions Non-illuminated

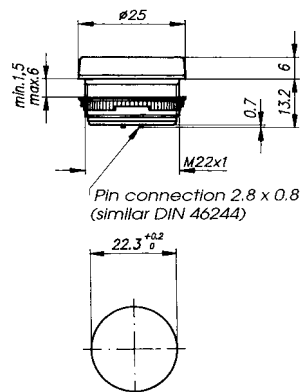
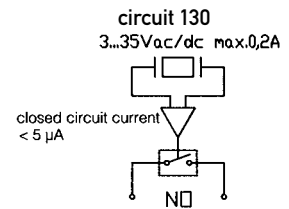


Ø 25, raised housing, prewired

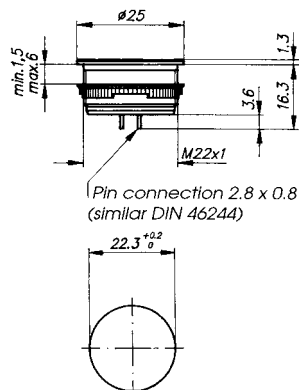
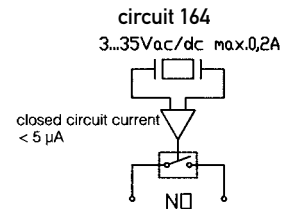
Circuit diagram



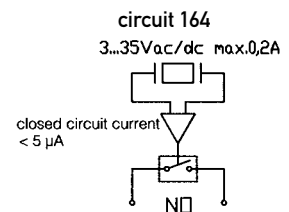
Ø 25, flush housing, prewired



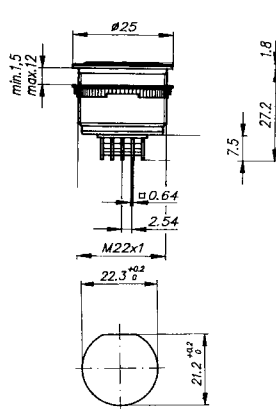
Ø 25, raised housing, solder connections 2.8 × 0.8



Ø 25, raised housing, solder connections 2.8 × 0.8

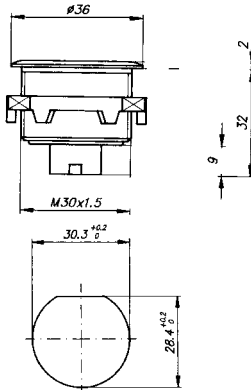
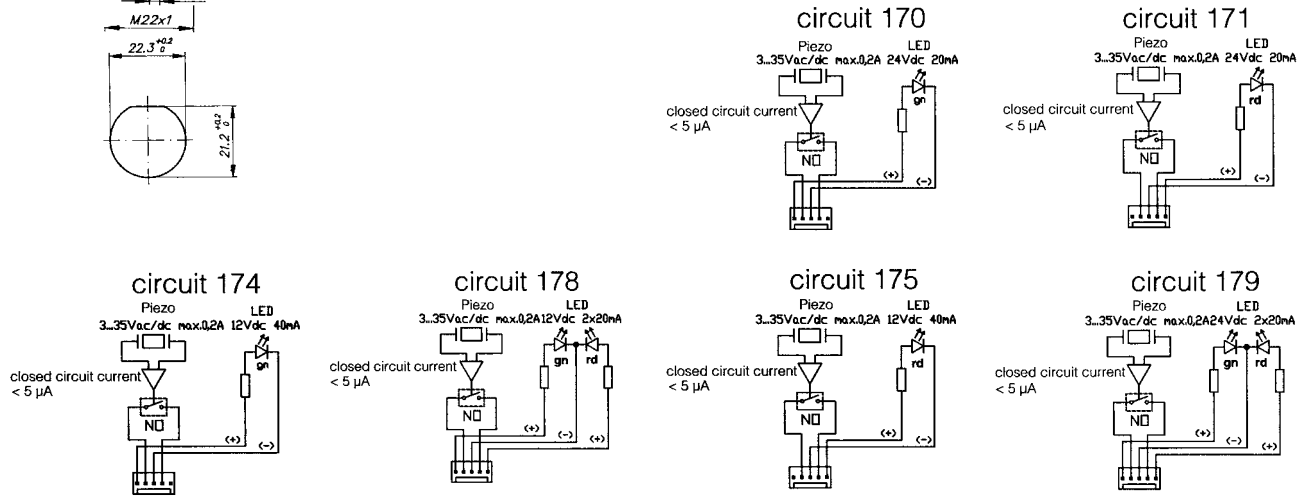


Dimensions Illuminated



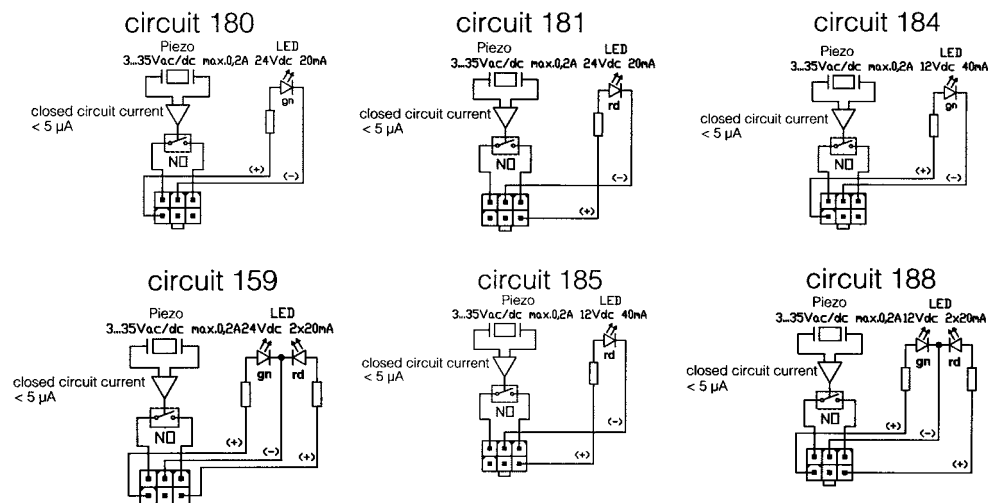
Ø 25, flush housing, Molex-style 5 pin

Circuit diagram

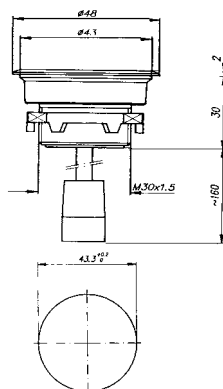


Ø 36, flush housing, Molex-style 6 pin

Circuit diagrams



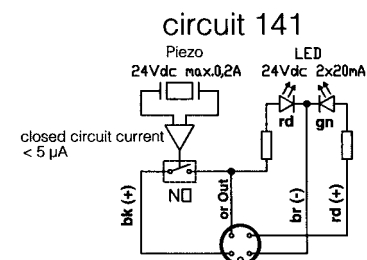
Dimensions Illuminated



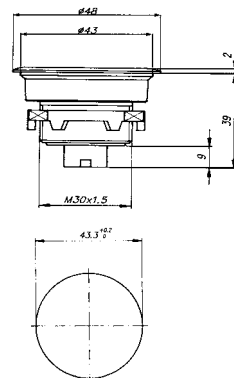
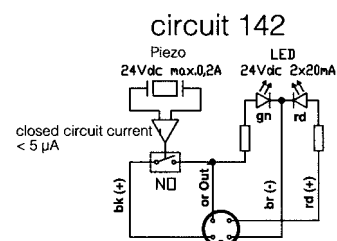
Ø 48, flush housing, wired with round connector
AMP-style 4 pin

Internally wired visual indicator, red

Circuit diagram

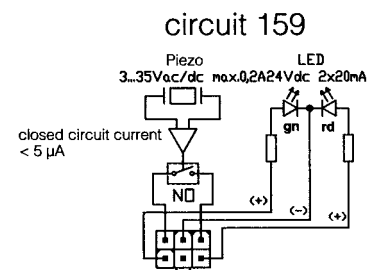
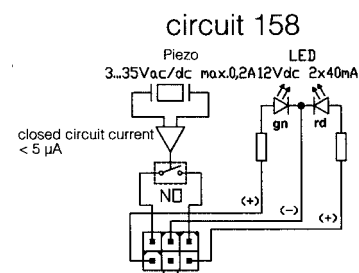


Internally wired visual indicator, green



Ø 48, flush housing, Molex-style 6 pin

Circuit diagram



Ordering Reference

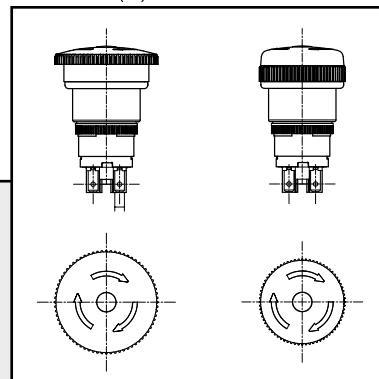
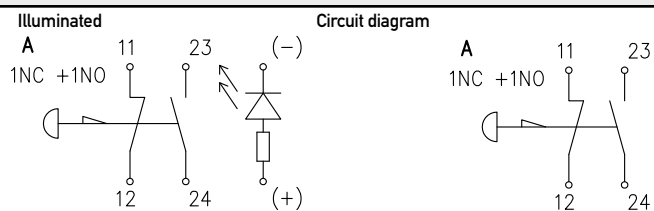
Basic type	TP7						Example: TP7	1	MD1A	00	B	2
Panel cut-out	1	Ø 16.2 mm (for Actuator Ø 18 mm only)										
	2	Ø 22.5 mm (for Actuator Ø 25 mm only)										
		Function	Actuator	Housing	Connector	Environmental protection	Part No. color (XX)					
Switch body	MD1A	Momentary 1NO: 35V / 0.2A	Ø 18 mm	Raised Aluminum	Prewired	IP68	TH7020XX129					
	MD2A	Momentary 1NO: 35V / 0.2A	Ø 18 mm	Raised Aluminum	3 Pin MOLEX	IP68	TH7025XX166					
	MD1B	Momentary 1NO: 35V / 0.2A	Ø 18 mm	Flush Aluminum	Prewired	IP68	TH7021XX129					
	MD2B	Momentary 1NO: 35V / 0.2A	Ø 18 mm	Flush Aluminum	3 Pin MOLEX	IP68	TH7026XX166					
Non-illuminated	MF1A	Momentary 1NO: 35V / 0.2A	Ø 25 mm	Raised Aluminum	Prewired	IP68	TH7030XX130					
	MF2A	Momentary 1NC: 35V / 0.2A	Ø 25 mm	Raised Aluminum	Prewired	IP68	TH7030XX131					
	MF4A	Momentary 1NO: 35V / 0.2A	Ø 25 mm	Raised Aluminum	2.8 × 0.8 mm	IP68	TH7035XX164					
	MF1B	Momentary 1NO: 35V / 0.2A	Ø 25 mm	Flush Aluminum	Prewired	IP68	TH7031XX130					
	MF2B	Momentary 1NC: 35V / 0.2A	Ø 25 mm	Flush Aluminum	Prewired	IP68	TH7031XX131					
	MF4B	Momentary 1NO: 35V / 0.2A	Ø 25 mm	Flush Aluminum	2.8 × 0.8 mm	IP68	TH7036XX164					
	MG1B	Momentary 1NO: 35V / 0.2A 12V/40mA LED red	Ø 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX175					
	MG2B	Momentary 1NO: 35V / 0.2A 24V/20mA LED red	Ø 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX171					
Illuminated	MG3B	Momentary 1NO: 35V / 0.2A 12V/40mA LED green	Ø 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX174					
	MG4B	Momentary 1NO: 35V / 0.2A 24V/20mA LED green	Ø 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX170					
	MG5B	Momentary 1NO: 35V / 0.2A 12V/40mA LED red/green	Ø 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX178					
	MG6B	Momentary 1NO: 35V / 0.2A 24V/20mA LED red/green	Ø 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX179					
Actuator color (XX)	00	Natural	Please select appropriate color code reference to complete the switch part no. eg. TH702004129									
	01	Yellow										
	02	Green										
	04	Red										
	05	Black										
	08	Dark Blue										
Illumination	X	Non-illuminated										
	B	12V	(for illuminated switch bodies only)									
	C	24V	(for illuminated switch bodies only)									
Illumination color	X	Non-illuminated										
	2	Green LED	(for illuminated switch bodies only)									
	4	Red LED	(for illuminated switch bodies only)									
	9	Red/Green LED	(for illuminated switch bodies only)									

Stainless steel versions, available upon request.

Basic type	TP7						Example: TP7	3	MH1B	00	B	4
Panel cut-out	3	Ø 30.3 mm (for Actuator Ø 36 mm only)										
	4	Ø 43.3 mm (for Actuator Ø 48 mm only)										
		Function	Actuator	Housing	Connector	Environmental protection	Part No. color (XX)					
Switch body Illuminated	MH1B	Momentary 1NO: 35V / 0.2 A 12V/40mA LED red	Ø 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX185					
	MH2B	Momentary 1NO: 35V / 0.2 A 24V/20mA LED red	Ø 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX181					
	MH3B	Momentary 1NO: 35V / 0.2 A 12V/40mA LED green	Ø 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX184					
	MH4B	Momentary 1NO: 35V / 0.2 A 24V/20mA LED green	Ø 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX180					
	MH5B	Momentary 1NO: 35V / 0.2 A 12V/2×20mA LED red/green	Ø 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX188					
	MH6B	Momentary 1NO: 35V / 0.2 A 24V/2×20mA LED red/green	Ø 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX159					
Illuminated	MJ1B	Momentary 1NO: 35V, 0.2 A 24V, 2×20 mA LED green/red	Ø 48 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7062XX159					
	MJ2B	Momentary 1NO: 35V, 0.2 A 12V, 2×40 mA LED green/red	Ø 48 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7062XX158					
	MJ3B	Momentary 1NO: 24V, 0.2 A 24V, 2×20 mA LED red/green	Ø 48 mm	Flush Aluminum	4 pin AMP	IP68	TH7062XX141					
	MJ4B	Momentary 1NO: 24V, 0.2 A 24V, 2×20 mA LED green/red	Ø 48 mm	Flush Aluminum	4 pin AMP	IP68	TH7062XX142					
Actuator color (XX)	00	Natural	Please select appropriate color code reference to complete the switch part no. above eg. TH706502185									
	01	Yellow										
	02	Green										
	04	Red										
	05	Black										
	08	Dark Blue										
Illumination	B	12V										
	C	24 V)										
Illumination color	2	Green LED										
	4	Red LED										
	9	Red/Green LED										

Stainless steel versions, available upon request.

Emergency Stop



TE1

www.ermec.com

TE1

Panel cut-out (mm) Ø 16.2 or Ø 22.5 with adapter option

- Characteristics
- NC contact with 3 mm contact gap
 - < 20 mm behind panel depth
 - rotary, reset mechanism
 - sealed IP65
 - 1NC + 1NO or 2 NC circuits

Rating 250 VAC, 2 A

Dimensions (mm) Ø 25/Ø 30

Button Ø 40/on request

Actuator ■ red mushroom cap

Approvals EN 60947-1, EN 60947-5-1, EN 60947-5-5



Popular products

Ordering Reference	Panel cut-out (mm)	Function	Actuator size (mm)	Illumination	Environmental protection	Terminals (mm)	Electrical rating
TE180203101	Ø 16.2	Rotary reset 1NC + 1NO	Ø 25	Non illuminated	IP65	faston 2.8 × 0.5 (switching circuits)	250 VAC, 2A
TE180203102	Ø 16.2	Rotary reset 1NC + 1NO	Ø 30	Non illuminated	IP65	faston 2.8 × 0.5 (switching circuits)	250 VAC, 2A
TE180203201	Ø 16.2	Rotary reset 1NC + 1NO	Ø 25	Illuminated	IP65	faston 2.8 × 0.5 (switching circuits) pre wired (illumination circuit)	250 VAC, 2A
TE180203202	Ø 16.2	Rotary reset 1NC + 1NO	Ø 30	Illuminated	IP65	faston 2.8 × 0.5 (switching circuits) pre wired (illumination circuit)	250 VAC, 2A
TE180204101	Ø 16.2	Rotary reset 2NC	Ø 25	Non illuminated	IP65	faston 2.8 × 0.5 (switching circuits)	250 VAC, 2A
TE180204102	Ø 16.2	Rotary reset 2NC	Ø 30	Non illuminated	IP65	faston 2.8 × 0.5 (switching circuits)	250 VAC, 2A
TE180204201	Ø 16.2	Rotary reset 2NC	Ø 25	Illuminated	IP65	faston 2.8 × 0.5 (switching circuits) pre wired (illumination circuit)	250 VAC, 2A
TE180204202	Ø 16.2	Rotary reset 2NC	Ø 30	Illuminated	IP65	faston 2.8 × 0.5 (switching circuits) pre wired (illumination circuit)	250 VAC, 2A
TH880200029	Ø 22.5	Adapter set					

Specifications

Mechanism	Latching positive action
Contact gap	≥ 3 mm
Actuating force	Approximately 30 N
Mounting	Central fixing with metal lock nut
Protection	IP65 (Pollution degree 3, Overvoltage category III)
Illumination	LED 24V dc, 10 mA
Temperature range °C	-25°C to +55°C
Contact material	Silver nickel with 0.4 μ m gold plating
Contact resistance	<30 mOhm (new unused product)
Contact configuration	1 NC + 1 NO or 2 NC independent circuits
Terminals	Faston 4 $\times$ 2.8 mm $\times$ 0.5 mm (switching circuits) pre wired (illumination circuit)

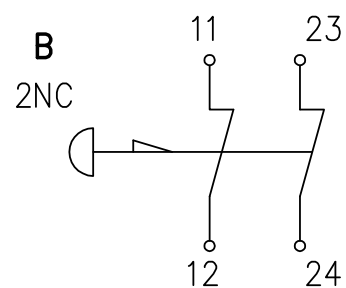
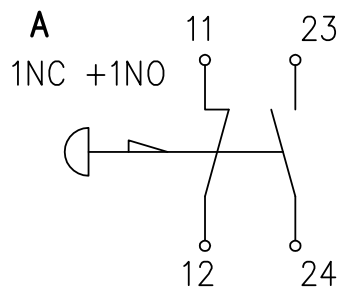
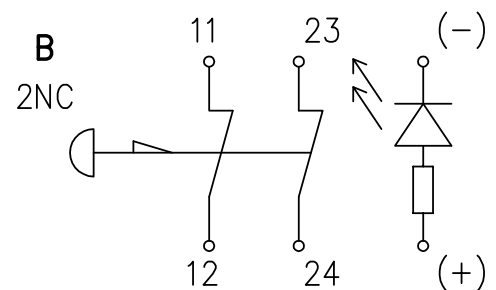
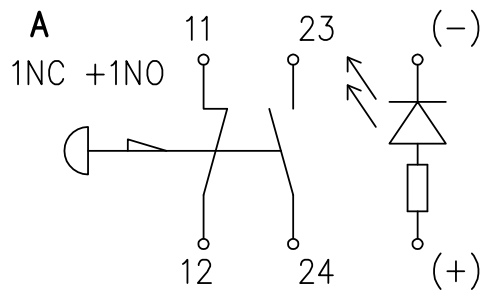
Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Approval
250 VAC	2.0	EN 60947

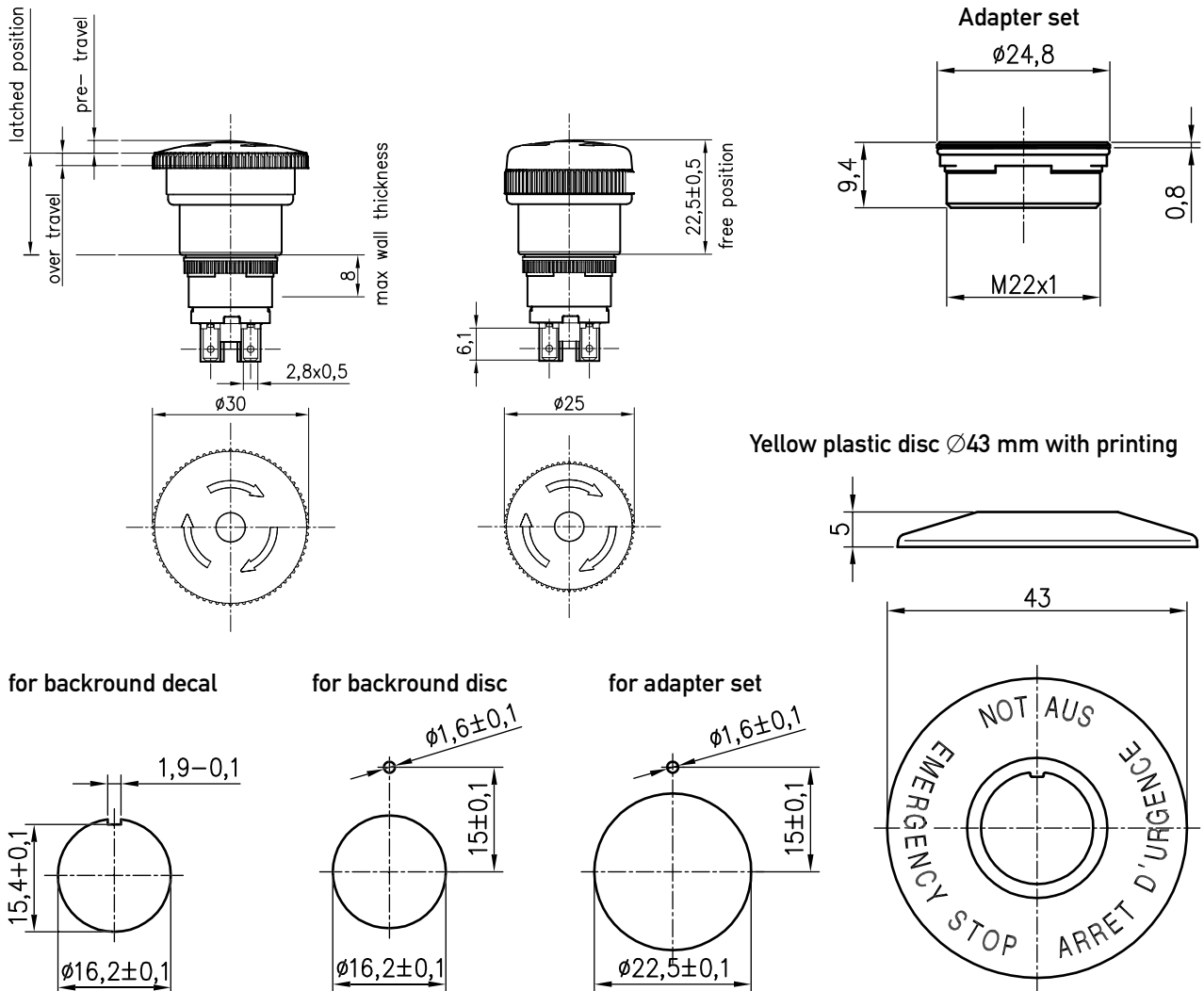
Electrical life	6,050 cycles at 2A, 250V, AC15
Mechanical life	30,000 cycles

Circuit diagram

Illuminated



Dimensions



Ordering Reference

Basic type	TE1	Example: TE1 80 203 1 01			
Reset mechanism	80 Rotary				
Circuit configuration	203 1 normally closed and 1 normally open circuit				
	204 2 normally closed circuits				
	1 Non-illuminated				
	2 Illuminated				
Actuator style	01 ø 25 mm				
	02 ø 30 mm				
Accessories	TH893002000 TH893011000 TH893000000 TH880200029	Yellow plastic disc ø 43 mm with printing Yellow self-adhesive label ø 43 mm with printing Yellow plastic adaptor ø 43 mm with printing Adapter set 22.5 mm	For 16.2 mm panel cut-out For 16.2 mm panel cut-out For 22.5 mm panel cut-out For 22.5 mm panel cut-out		

TE8

Panel cut-out (mm)	Ø 16.2 or Ø 22.5
Characteristics	■ meets EN418 directives (Ø 27 mm only) ■ sealed IP66 or IP67 ■ rotary, pull or key reset ■ yellow disk bezel (optional) ■ 1NO + 1 NC or 2 NC
Rating	250 VAC, 6 A
Dimensions (mm)	Ø 27 Ø 40
Actuator	■ red mushroom cap (Ø 27 mm) ■ reset by KABA key (Ø 40 mm)
Approvals	IEC 947-5-1/947-5-5 (Ø 27 mm only)



Popular products

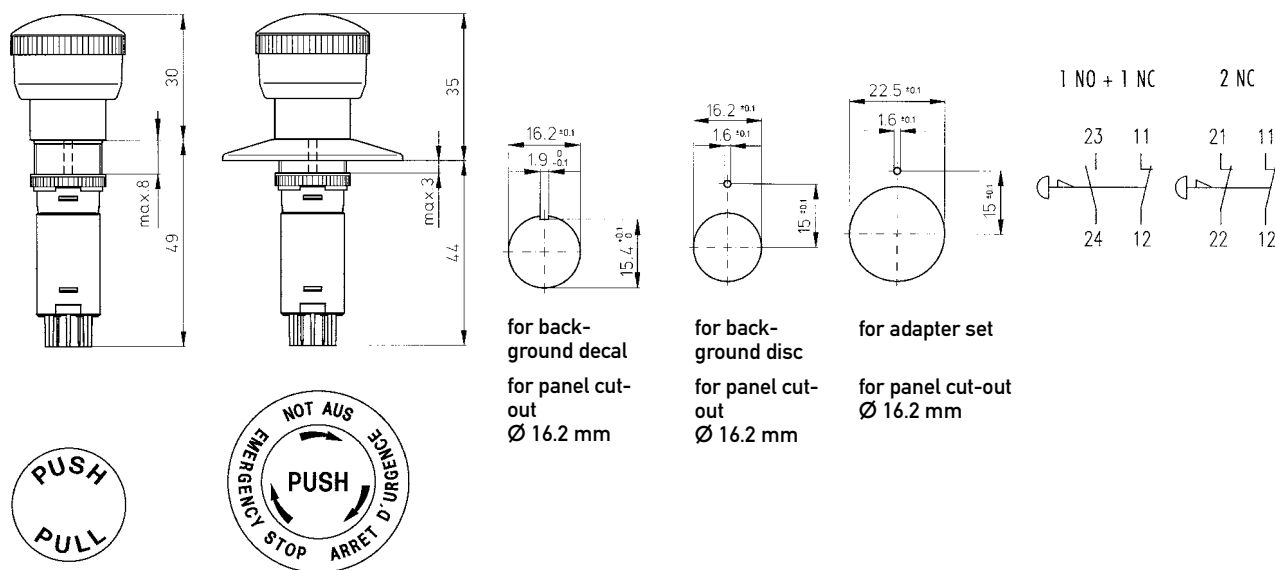
Ordering Reference	Panel cut-out (mm)	Function	Actuator style (mm)	Environmental protection	Terminals (mm)	Electrical rating
TE82KJB1XX	Ø 22.5	Key release 1NO + 1NC	Ø 40	IP40	2.8 × 0.5 faston	250 VAC, 6A
TE81RGP2A1	Ø 16.2	Rotary release 2NC	Ø 27	IP67	2.8 × 0.5 faston	250 VAC, 6A

Specifications

Mechanism	Momentary positive action with wiping contacts
Contact gap	>3 mm
Actuating force	Approximately 25 N
Mounting	Central fixing with metal lock nut (E switch) and Anti-rotation device on key (reset switch)
Protection	IP67
Bezel material	Thermoplastic or nickel-plated brass
Lens material	Polycarbonate
Illumination	Non-illuminated
Temperature range °C	-25°C to +55°C
Contact block	Supplied fitted
Contact block housing	Thermoplastic
Terminal material	Silver nickel with 0.4 µm gold plating
Contact resistance	<30 mOhm
Number of contact blocks	1 NO + 1 NC or 2 NC – independent circuits
Terminals	Faston - 2.8 mm × 0.5 mm, to DIN 46247

Dimensions Emergency stop switches according to EN 418 IP66/IP67

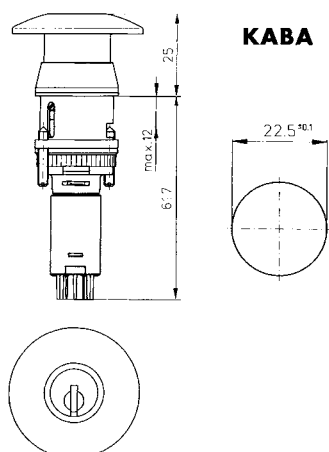
Circuit diagram



Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load (A)	Approval
230 VAC	6.0		IEC 947-5-1, AC15 - recommended circuit breaker C6A
Electrical life	20,000 cycles at 10A, 24V, DC13 50,000 cycles at 5A, 24V, DC13 100,000 cycles at 5A, 12V, DC13 50,000 cycles at 6A, 250V, AC12 300,000 cycles at 2.5A, 250V, AC12		

Dimensions Mushrooms switches with key reset IP40



mushroom cap × 40 mm, red
bezel × 29 mm

These switches can be integrated in security key code plans. The following security system are available at a surcharge:
KABA 8, KABA 20, KABA STAR. Extra registered keys are only available from the cylinder manufacturer.

model with KABA 8-cylinder
standard key code 317 000

Cylinder no.
for key code plans 1063 B

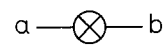
Ordering Reference

Basic type	TE8				Example: TE8	1	KJB1	A1
Panel cut-out	1	Ø 16.2 mm for E-Stop with rotary and pull reset						
	2	Ø 22.5 mm only for E-Stop with key release						
Switch body	Function	Actuator style	Contact block	Part No.				
	KJB1	E-Stop with key reset; 1NO + 1NC	Ø 40 mm red; IP40; no print	1NO+1NC; 2.8 × 0.5mm	TH885503100			
	KJB2	E-Stop with key reset; 2NC	Ø 40 mm red; IP40; no print	2NC; 2.8 × 0.5mm	TH885504100			
	PGP1	E-Stop with pull reset; conforms to EN 418	Ø 27 mm red; IP67; printed	1NO+1NC; 2.8 × 0.5mm	TH881203000			
	PGP2	E-Stop with pull reset; conforms to EN 418	Ø 27 mm red; IP67; printed	2NC; 2.8 × 0.5mm	TH881204000			
	RGP1	E-Stop with rotary reset; conforms to EN 418	Ø 27 mm red; IP67; printed	1NO+1NC; 2.8 × 0.5mm	TH880203000			
	RGP2	E-Stop with rotary reset; conforms to EN 418	Ø 27 mm red; IP67; printed	2NC; 2.8 × 0.5mm	TH880204000			
	Disk bezel	XX	Not available for key reset version					
	A1	Yellow plastic disk Ø 43 mm with printing	For 16.2mm panel cut out	TH893002000				
	B1	Yellow plastic disk Ø 43 mm without printing	For 16.2mm panel cut out	TH893003000				
	C1	Yellow self adhesive label Ø 43 mm with printing	For 16.2mm panel cut out	TH893011000				
	D1	Yellow self adhesive label Ø 43 mm without printing	For 16.2mm panel cut out	TH893010000				
	E1	Yellow plastic adapterset Ø 43 mm with printing	For 22.5mm panel cut out	TH893000000				
	F1	Yellow plastic adapterset Ø 43 mm without printing	For 22.5mm panel cut out	TH893001000				

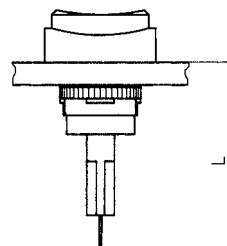
Indicators



Circuit diagram



Dimension



TI2

TI2	
Panel cut-out (mm)	Ø 16.2 or Ø 22.5
Characteristics	■ illuminated ■ sealed IP40, IP65 or IP67 ■ wide range of bezels ■ midget grooved lamp/LED
Rating	max. 60 VAC / VDC
Dimensions (mm)	18 × 24 18 × 18 Ø 18 Ø 25
Actuator	■ lenses in different shapes and colors
Approvals	UL, CSA, VDE



Popular products

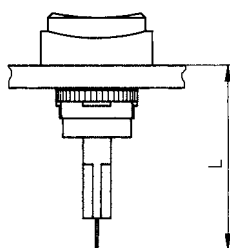
Ordering Reference	Panel cut-out (mm)	Function	Actuator style (mm)	Environmental Protection
TI21VAAF4CN	Ø 16.2	Visual	18 × 24	IP40
TI22VFAF4CN	Ø 22.5	Visual	Ø 25	IP65

Specifications

Mounting	Central fixing with metal lock nut
Protection	IP40, IP65, IP67
Bezel material	Thermoplastic or anodized aluminum alloy
Lens material	Polycarbonate - engravable
Illumination	T1 ¼ midget grooved lamps - incandescent lamps , LEDs, multi LEDs 60 V, 1.2 W maximum Lamp contact a = anode (+), b = cathode (-) Appropriate safety regulations should be respected when using the indicator light.
Temperature range °C	-25°C to +85°C
Terminals	Solder – suitable for wire diameter 1 × 1.00 mm ² (braided), 2 × 0.75 mm (stranded) Faston – 2.8 mm × 0.5 mm
Vibration resistance	1.5 mm pp amplitude at 55 Hz

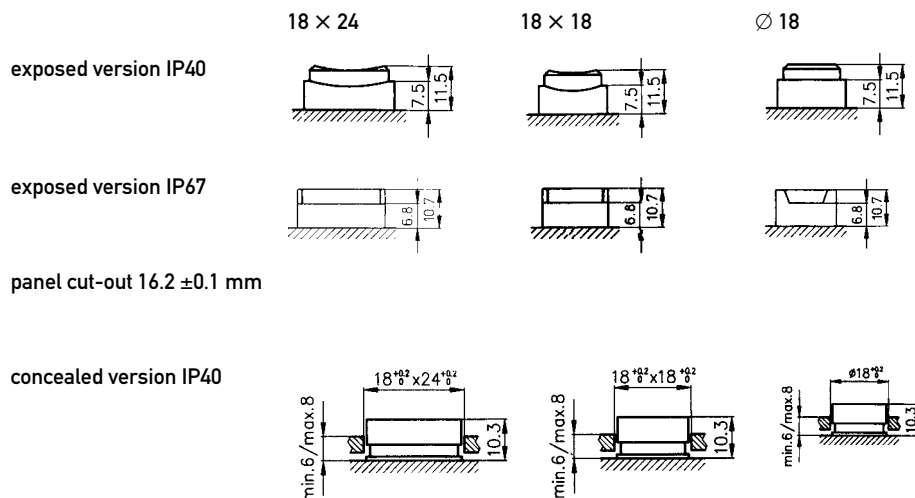
Circuit diagram

Dimensions



Length in mm	
plastic bezels	38 mm
countersunk mounting bezels	40 mm
aluminum bezels	48 mm
countersunk mounting	

Plastic bezel and lens heights in mm (switch off position)

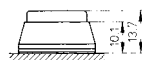


Dimensions Aluminum bezel Ø 25, Lens heights in mm (switch off position)

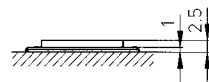
aluminum bezel
without sealing gasket (IP40)



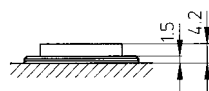
aluminum bezel
with sealing gasket (IP65)



aluminum bezel
countersunk mounting (IP40)



aluminum bezel
countersunk mounting (IP67)



panel cut-out 22.5 ± 0.1 mm

front panel thickness	plastic bezel 1	1.0 to 6.5 mm, 1.0 to 5.0 mm
	aluminum bezel	1.0 to 5.0 mm
	countersunk mounting	2.0 to 15.0 mm

Ordering Reference

Basic type	T12				Example: T12	1	VAA	F0	A	N
Panel cut-out	1 Ø 16.2 mm									
Switch body	Function	Actuator	Housing (plastic)	Part No.						
VAA	Visual	18 × 24 mm	Exposed; IP40; faston	TH551008000						
VAL	Visual	18 × 24 mm	Exposed; IP40; solder	TH551108000						
VAD	Visual	18 × 24 mm	Exposed; IP67; faston	TH551015000						
VAO	Visual	18 × 24 mm	Exposed; IP67; solder	TH551115000						
VAB	Visual	18 × 24 mm	Concealed; IP40; faston	TH551002000						
VAM	Visual	18 × 24 mm	Concealed; IP40; solder	TH551102000						
VBA	Visual	18 × 18 mm	Exposed; IP40; faston	TH553008000						
VB�	Visual	18 × 18 mm	Exposed; IP40; solder	TH553108000						
VBC	Visual	18 × 18 mm	Exposed; IP67; faston	TH553015000						
VBN	Visual	18 × 18 mm	Exposed; IP67; solder	TH553115000						
VBB	Visual	18 × 18 mm	Concealed; IP40; faston	TH553002000						
VBM	Visual	18 × 18 mm	Concealed; IP40; solder	TH553102000						
VCA	Visual	Ø 18	Exposed; IP40; faston	TH555008000						
VCL	Visual	Ø 18	Exposed; IP40; solder	TH555108000						
VCC	Visual	Ø 18	Exposed; IP67; faston	TH555015000						
VCN	Visual	Ø 18	Exposed; IP67; solder	TH555115000						
VCB	Visual	Ø 18	Concealed; IP40; faston	TH555002000						
VCM	Visual	Ø 18	Concealed; IP40; solder	TH555102000						
Lens transparent			For body style VAA/VAL (IP40)	For body style VAB/VAM (IP40)	For body style VAD/VAO (IP67)					
F0	White		TH461021000	TH461017000	TH561011000					
F1	Yellow		TH461121000	TH461117000	TH561111000					
F2	Green		TH461221000	TH461217000	TH561211000					
F3	Blue		TH461321000	TH461317000	TH561311000					
F4	Red		TH461421000	TH461417000	TH561411000					
F6	Orange		TH461621000	TH461617000	TH561611000					
			For body style VBA/VBL (IP40)	For body style VBB/VBM (IP40)	For body style VBC/VBN (IP67)					
F0	White		TH463021000	TH463018000	TH563011000					
F1	Yellow		TH463121000	TH463118000	TH563111000					
F2	Green		TH463221000	TH463218000	TH563211000					
F3	Blue		TH463321000	TH463318000	TH563311000					
F4	Red		TH463421000	TH463418000	TH563411000					
F6	Orange		TH463621000	TH463618000	TH563611000					
			For body style VCA/VCL (IP40)	For body style VCB/VCM (IP40)	For body style VCC/VCN (IP67)					
F0	White		TH465021000	TH465015000	TH565011000					
F1	Yellow		TH465121000	TH465115000	TH565111000					
F2	Green		TH465221000	TH465215000	TH565211000					
F3	Blue		TH465321000	TH465315000	TH565311000					
F4	Red		TH465421000	TH465415000	TH565411000					
F6	Orange		TH465621000	TH465615000	TH565611000					
Illumination	A	6V								
	B	12V								
	C	24V								
	F	48V								
Illumination color	N	Incandescent lamp	6V, 200 mA TH590000000	12V, 80 mA TH590001000	24V, 50 mA TH590006000	48V, 25 mA TH590004000				
	1	Yellow LED	6V AC/DC, 45 mA TH590231000	12V AC/DC, 25 mA TH590234000	24V AC/DC, 12.5 mA TH590237000	48V AC/DC, 12.5 mA TH590240000				
	2	Green LED	TH590232000	TH590235000	TH590238000	TH590241000				
	4	Red LED	TH590230000	TH590233000	TH590236000	TH590239000				

Acoustic versions available upon request

Ordering Reference

Basic type	TI2					Example: TI2	2	VFA	F0	A	N
Panel cut-out	2	Ø 22.5 mm									
Switch body	VFA	Function	Actuator style	Housing			Part No.				
	VFB	Visual	Ø 25	Exposed plastic; IP65; faston			TH555020000				
		Visual	Ø 25	Exposed plastic; IP65; solder			TH555120000				
	VFC	Visual	Ø 25	Exposed aluminum; IP40/IP65*; faston			TH555018000				
	VFD	Visual	Ø 25	Exposed aluminum; IP40/IP65*; solder			TH555118000				
	VFE	Visual	Ø 25	Exposed aluminum; IP65 with silicon cap; faston			TH555033000				
	VFF	Visual	Ø 25	Exposed aluminum; IP65 with silicon cap; solder			TH555133000				
	VFG	Visual	Ø 25	Flush-aluminum; IP40; faston			TH555050000				
	VFH	Visual	Ø 25	Flush-aluminum; IP40; solder			TH555150000				
	VFJ	Visual	Ø 25	Flush-aluminum; IP67; faston			TH555051000				
	VFK	Visual	Ø 25	Flush-aluminum; IP67; solder			TH555151000				
Lens transparent				For body style	VFC/VFD	With sealing ring					
				VFA/VFB (IP65)	VFG/VFH (IP40/IP65)	VFE/VFF (IP65)	VFJ/VFK (IP67)				
	F0	White		TH565024000	TH465015000	TH465001000	TH565025000				
	F1	Yellow		TH565124000	TH465115000	TH465101000	TH565125000				
	F2	Green		TH565224000	TH465215000	TH465201000	TH565225000				
	F3	Blue		TH565324000	TH465315000	TH465301000	TH565325000				
	F4	Red		TH565424000	TH465415000	TH465401000	TH565425000				
	F6	Orange		TH565624000	TH465615000	TH465601000	TH565625000				
Illumination	A	6V									
	B	12V									
	C	24V									
	F	48V									
Illumination color	N	Incandescent lamp	6V, 200 mA TH590000000	12V, 80 mA TH590001000	24V, 50 mA TH590006000	48V, 25 mA TH590004000					
			6V AC/DC, 45 mA	12V AC/DC, 25 mA	24V AC/DC, 12.5 mA	48V AC/DC, 12.5 mA					
	1	Yellow LED	TH590231000	TH590234000	TH590237000	TH590240000					
	2	Green LED	TH590232000	TH590235000	TH590238000	TH590241000					
	4	Red LED	TH590230000	TH590233000	TH590236000	TH590239000					
Acoustic versions available upon request											

Acoustic versions available upon request

TI5

TI5

Panel cut-out (mm) Ø 16.2 or Ø 22.5

Characteristics

- illuminated
- sealed IP40 or IP65
- wide range of bezels
- midget grooved lamp/LED

Rating max. 60 VAC/VDC

Dimensions (mm)

18 × 24
18 × 18
Ø 18
Ø 25

Actuator ■ lenses in different shapes and colors

Approvals UL, CSA, VDE



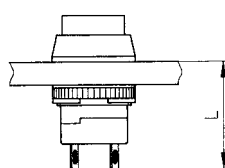
Popular products

Ordering Reference	Panel cut-out (mm)	Function	Actuator style (mm)	Environmental Protection
TI51VALA4CN	Ø 16.2	Visual	18 × 24	IP40
TI52VFSF4CN	Ø 22.5	Visual	Ø 25	IP65

Specifications

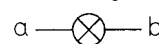
Mounting	Central fixing with metal lock nut
Protection	IP40, IP65
Bezel material	Thermoplastic or anodized aluminum alloy
Lens material	Polycarbonate – engravable
Illumination	T1 ¾ midget grooved lamps – incandescent lamps, LEDs, multi LEDs 60 V, 1.2 W maximum Lamp contact a = anode (+), b = cathode (-) Appropriate safety regulations should be respected when using the indicator light.
Temperature range °C	-25°C to +85°C
Terminal material	Silver alloy with 2 µm silver plating, 4 µm gold plating
Terminals	Patented flexible solder – suitable for wire diameter 2 × 1.00 mm ² (braided), 4 × 0.75 mm (stranded)
Vibration resistance	1.5 mm pp amplitude at 55 Hz

Dimensions



Length in mm	
plastic bezels	23.5
countersunk mounting bezels	22.5
aluminum bezels	32.0
countersunk mounting	

Circuit diagram



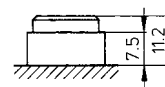
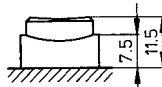
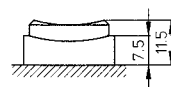
Plastic bezel and lens heights in mm (switch off position)

18 × 24

18 × 18

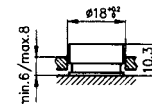
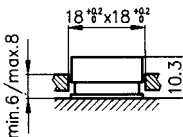
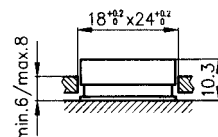
Ø 18

exposed version IP 40

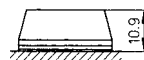
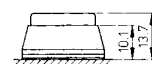
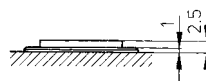


panel cut-out 16.2 ± 0.1 mm

concealed version IP40



Aluminum bezel Ø 25 and lens height in mm (switch off position)

 aluminum bezel
without sealing gasket (IP40)

 aluminum bezel
with sealing gasket (IP65)

 aluminum bezel
countersunk mounting (IP40)


panel cut-out 22.5 ± 0.1 mm

front panel thickness	plastic bezel (Ø 18 mm)	1.0 to 5.5 mm
	aluminum bezel (Ø 25 mm)	1.0 to 5.0 mm
	countersunk mounting (Ø 25 mm)	2.0 to 15.0 mm

Ordering Reference

Basic type	T15						Example: T15	1	VAL	A0	A	N
Panel cut-out	1	Ø 16.2 mm										
Switch body	(A)	VAL	Function	Actuator style	Housing (plastic)	Part No.						
		VAM	Visual	18 × 24 mm	Exposed; IP40; solder	TH550008000						
	(B)	VBL	Visual	18 × 18 mm	Exposed; IP40; solder	TH552008000						
		VBM	Visual	18 × 18 mm	Concealed; IP40; solder	TH552037000						
	(C)	VDL	Visual	Ø 18 mm	Exposed; IP40; solder	TH554008000						
		VDM	Visual	Ø 18 mm	Concealed; IP40; solder	TH554037000						
	Lens, transparent For Switch body style (A)	A0	White	Exposed 15 × 21 mm	Exposed TH461021000	Concealed 18 × 24 mm	Concealed TH461017000					
		A1	Yellow	15 × 21 mm	TH461121000	18 × 24 mm	TH461117000					
		A2	Green	15 × 21 mm	TH461221000	18 × 24 mm	TH461217000					
A3		Blue	15 × 21 mm	TH461321000	18 × 24 mm	TH461317000						
A4		Red	15 × 21 mm	TH461421000	18 × 24 mm	TH461417000						
A6		Orange	15 × 21 mm	TH461621000	18 × 24 mm	TH461617000						
For Switch body style (B)		B0	White	15 × 15 mm	TH463021000	18 × 18 mm	TH463018000					
	B1	Yellow	15 × 15 mm	TH463121000	18 × 18 mm	TH463118000						
	B2	Green	15 × 15 mm	TH463221000	18 × 18 mm	TH463218000						
	B3	Blue	15 × 15 mm	TH463321000	18 × 18 mm	TH463318000						
	B4	Red	15 × 15 mm	TH463421000	18 × 18 mm	TH463418000						
	B6	Orange	15 × 15 mm	TH463621000	18 × 18 mm	TH463618000						
For Switch body style (C)	D0	White	Ø 15 mm	TH465021000	Ø 18 mm	TH465015000						
	D1	Yellow	Ø 15 mm	TH465121000	Ø 18 mm	TH465115000						
	D2	Green	Ø 15 mm	TH465221000	Ø 18 mm	TH465215000						
	D3	Blue	Ø 15 mm	TH465321000	Ø 18 mm	TH465315000						
	D4	Red	Ø 15 mm	TH465421000	Ø 18 mm	TH465415000						
	D6	Orange	Ø 15 mm	TH465621000	Ø 18 mm	TH465615000						
Illumination	X	Non illuminated										
	A	6V										
	B	12V										
	C	24V										
	F	48V										
Illumination color	X	Non illuminated										
	N	Incandescent lamp										
			6V, 200 mA TH590000000		12V, 80 mA TH590001000		24V, 50 mA TH590006000		48V, 25 mA TH590004000			
	1	Yellow LED	6V AC/DC, 45 mA TH590231000		12V AC/DC, 25 mA TH590234000		24V AC/DC, 12.5 mA TH590237000		48V AC/DC, 12.5 mA TH590240000			
	2	Green LED	TH590232000		TH590235000		TH590238000		TH590241000			
4	Red LED	TH590230000		TH590233000		TH590236000		TH590239000				

Acoustic versions available upon request

Ordering Reference

Basic type	T15										Example: T15				2	VFP	F0	A	N	
Panel cut-out	2 Ø 22.5 mm																			
Switch body	VFP Visual	Function Ø 25 mm	Actuator style Exposed aluminum; IP40; solder	Housing (Aluminum)	Part No. TH554018000															
	VFQ Visual	Ø 25 mm	Exposed aluminum; IP65; solder		TH554018000															
	VFR Visual	Ø 25 mm	Exposed aluminum; IP65* with silicon cap; solder		TH554033000															
	VFS Visual	Ø 25 mm	Flush-aluminum; IP40; solder		TH554050000															
Lens transparent Only for Visual Indicators	F0	White	Ø 18	Exposed IP40/IP65 Flush IP40		Exposed IP65 with sealing ring														
	F1	Yellow	Ø 18	TH465015000		TH465001000														
	F2	Green	Ø 18	TH465115000		TH465101000														
	F3	Blue	Ø 18	TH465215000		TH465201000														
	F4	Red	Ø 18	TH465315000		TH465301000														
	F6	Orange	Ø 18	TH465415000		TH465401000														
				TH465615000		TH465601000														
Illumination	X	Non illuminated																		
	A	6V																		
	B	12V																		
	C	24V																		
	F	48V																		
Illumination color	X	Non illuminated																		
	N	Incandescent lamp		6V, 200 mA TH590000000		12V, 80 mA TH590001000		24V, 50 mA TH590006000		48V, 25 mA TH590004000										
				6V AC/DC, 45 mA TH590231000		12V AC/DC, 25 mA TH590234000		24V AC/DC, 12.5 mA TH590237000		48V AC/DC, 12.5 mA TH590240000										
	1	Yellow LED		TH590232000		TH590235000		TH590238000		TH590241000										
	2	Green LED		TH590230000		TH590233000		TH590236000		TH590239000										
	4	Red LED																		
	Acoustic versions available upon request																			

TI9

Panel cut-out (mm)	Ø 22.5
Characteristics	■ illuminated ■ sealed IP67 ■ round metal bezels ■ red LED ■ green LED ■ red-green LED
Rating	24 VDC 20 mA
Dimensions (mm)	Ø 25
Actuator	■ aluminum housing in different colors
Approvals	none



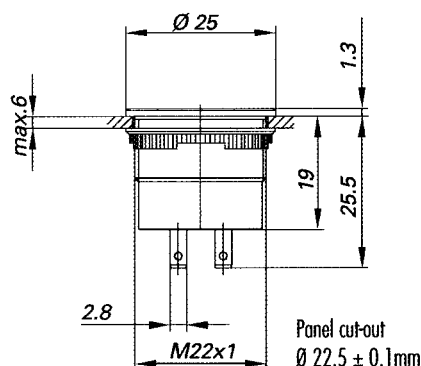
Popular products

Ordering Reference	Panel cut-out (mm)	Function	Actuator style (mm)	Environmental Protection
TI92VFOA500	Ø 22.5	Visual	Ø 25	IP67

Specifications

Mounting	Central fixing with metal lock nut
Protection	IP67
Housing and actuator material	Anodised aluminum or stainless steel (upon request)
Temperature range °C	-30°C to +70°C
Terminals	Faston - 2.8mm × 0.5mm

Dimensions



Ordering Reference

Basic type	TI9	Example: TI9	2	VFOA	504
Panel cut-out	2	Ø 22.5 mm			
Switch body	VFOA	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminum natural; faston 2.8 mm × 0.5 mm	TH920000	XXX	
	VF1A	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminum yellow; faston 2.8 mm × 0.5 mm	TH920001	XXX	
	VF2A	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminum green; faston 2.8 mm × 0.5 mm	TH920002	XXX	
	VF4A	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminum red; faston 2.8 mm × 0.5 mm	TH920004	XXX	
	VF5A	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminum black; faston 2.8 mm × 0.5 mm	TH920005	XXX	
	VF8A	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminum dark blue; faston 2.8 mm × 0.5 mm	TH920008	XXX	
Illumination (XXX)	504	Red LED: 24 VDC, 20 mA			
	502	Green LED: 24 VDC, 20 mA			
	500	Red/Green LED: 24 VDC, 20 mA			

Stainless steel versions available upon request.

Modular Keyswitch



Key positions/function

2 Positions

P0
P2

A

B

C

D

• Key trapping position

3 Positions

P0
P1
P2

E

F

G

H

I

J

K

L

M

N

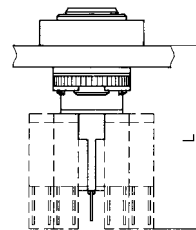
O

P

Q

R

Dimension



TK2

Panel cut-out (mm)	Ø 16.2 or Ø 22.5
Characteristics	■ 2 or 3 position ■ sealed IP40 or IP65 ■ plastic or aluminum bezels ■ wide range of bezels ■ NO, NC ■ gold plated, single or double pole, contact blocks ■ key trapping options
Rating	250 VAC, 5 A
Dimensions (mm)	18 × 24 18 × 18 Ø 18 Ø 25
Actuator	■ key-KABA MICRO
Approvals	UL, CSA, VDE



Popular products

Ordering Reference	Panel cut-out (mm)	Function	Actuator style (mm)	Environmental protection	Terminals (mm)	Electrical rating
TK21B2A001C1C1A	Ø 16.2	2 Position Kaba Micro key	18 × 24	IP40	2.8 × 0.5 faston	250 VAC, 5A
TK22B2E001C1C1E	Ø 22.5	2 Position Kaba Micro key	Ø 25	IP65	2.8 × 0.5 faston	250 VAC, 5A

Specifications

Mechanism	Key actuated
Mounting	Central fixing with metal lock nut
Protection	IP40 or IP65
Bezel material	Thermoplastic or anodized aluminum alloy
Temperature range °C	-25°C to +85°C
Mechanical life	10 ⁶ cycles
Contact block	Slide-on assembly by the user
Contact block housing	Self-extinguishing duroplastic (UL 94 V0)
Terminal material	Silver alloy with 0.2 µm silver plating plus 0.4 µm gold plating
Contact resistance	<30 mOhm
Number of contact blocks	User configurable NO or NC types up to a maximum of 2 double contact blocks
Terminals	Patented flexible solder – suitable for wire diameter 1 × 1.00 mm ² (braided), 2 × 0.75 mm (stranded) Faston - 2.8mm × 0.5mm
Vibration resistance	1.5 mm pp amplitude at 55 Hz

Cylinder locks

KABA MICRO

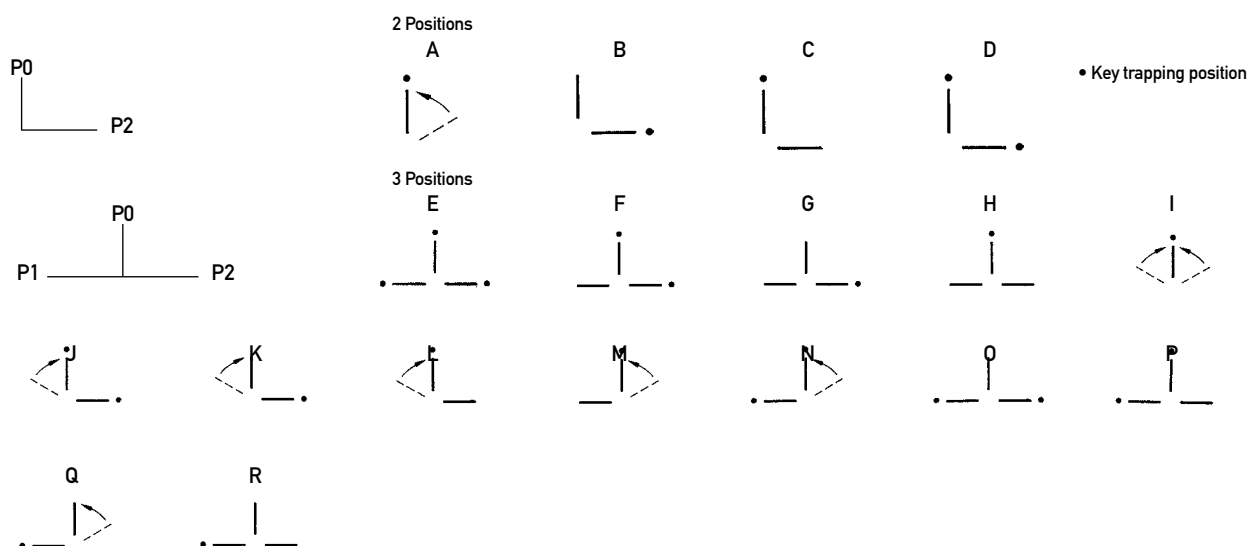
- Compact format
- Key code EB 0001 (standard)
- Key codes EB 0002 - EB 0020 (upon request)
- Over 10'000 different key code variations
- Key lock systems with master keys and central locks
- 2 keys per key switch (additional keys on order)

Destruction of the key or lock must be expected if the level 50 Ncm is exceeded.

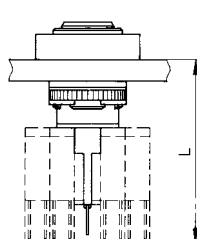
Recommended maximum electrical ratings

Voltage (max) 250 VAC	Resistive load (A) 5.0 (0.7 pf)	Inductive load (A)	Approval UL, CSA, VDE - max. admissible circuit breaker C6A
12 VDC	5.0	3.0	General rating
24 VDC	4.0	2.0	General rating
36 VDC	3.0	1.7	General rating
48 VDC	2.0	1.5	General rating
60 VDC	1.5	1.2	General rating
125 VDC	0.5	0.3	General rating
250 VDC	0.3	0.2	General rating
Electrical life	50,000 cycles at 5A, 250 VAC, 0.7 pf		

Key positions/ function



Dimensions

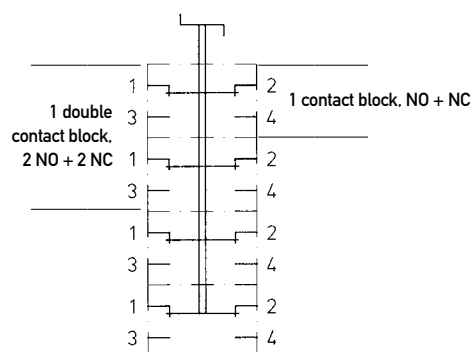


Length in mm (with contact block)

plastic bezels 43

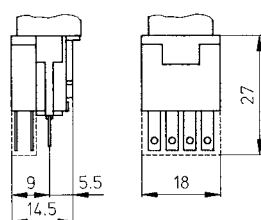
aluminum bezels 42

Circuit diagram (2 double contact blocks)

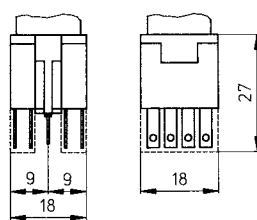


Contact blocks

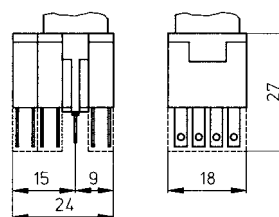
1 contact block



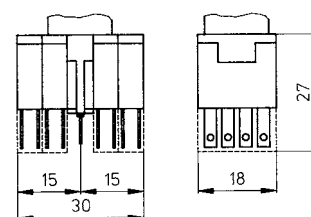
2 contact blocks



1 contact block + 1 double contact block



2 double contact blocks



Cylinder height

plastic bezel IP40



Panel cut-out 22.5 ± 0.1 mm

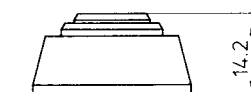
Front panel thickness

plastic bezel IP65 Panel cut-out $16.2 \text{ mm} \pm 0.1 \text{ mm}$



plastic bezel IP40
plastic bezel IP65
aluminum bezel

aluminum bezel 2 position key Panel cut-out $22.5 \text{ mm} \pm 0.1 \text{ mm}$



2.0 to 5.0 mm
2.0 to 6.5 mm
1.0 to 5.0 mm

Ordering Reference

Basic type	TK2									
	Example: TK2 1 A2A 001 A1 A1 A									
Panel cut-out	1	Ø 16.2 mm for plastic bezel key switches								
	2	Ø 22.5 mm for Aluminum bezel key switches								
Key position / function	A2A	2 Positions; IP40; Kaba Micro; Key removable P0				Momentary P2		TH548032XXX		
16.2 mm cut-out	B2A	2 Positions; IP40; Kaba Micro; Key removable P2				Latching P2		TH548034XXX		
	C2A	2 Positions; IP40; Kaba Micro; Key removable P0				Latching P2		TH548036XXX		
	D2A	2 Positions; IP40; Kaba Micro; Key removable P0 + P2				Latching P2		TH548038XXX		
	A2C	2 Positions; IP65; Kaba Micro; Key removable P0				Momentary P2		TH548132XXX		
22.5 mm cut-out	B2C	2 Positions; IP65; Kaba Micro; Key removable P2				Latching P2		TH548134XXX		
	C2C	2 Positions; IP65; Kaba Micro; Key removable P0				Latching P2		TH548136XXX		
	D2C	2 Positions; IP65; Kaba Micro; Key removable P0 + P2				Latching P2		TH548138XXX		
	A2E	2 Positions; Ø 25 mm Aluminum bezel IP65; Kaba Micro; Key removable P0				Momentary P2		TH544040XXX		
	B2E	2 Positions; Ø 25 mm Aluminum bezel IP65; Kaba Micro; Key removable P2				Latching P2		TH544041XXX		
	C2E	2 Positions; Ø 25 mm Aluminum bezel IP65; Kaba Micro; Key removable P0				Latching P2		TH544042XXX		
	D2E	2 Positions; Ø 25 mm Aluminum bezel IP65; Kaba Micro; Key removable P0 + P2				Latching P2		TH544043XXX		
Key code number (XXX)	001	Kaba Micro Code EB0001	THXXXXXX	001	012	Kaba Micro Code EB0012	THXXXXXX	012		
	002	Kaba Micro Code EB0002	THXXXXXX	002	013	Kaba Micro Code EB0013	THXXXXXX	013		
	003	Kaba Micro Code EB0003	THXXXXXX	003	014	Kaba Micro Code EB0014	THXXXXXX	014		
	004	Kaba Micro Code EB0004	THXXXXXX	004	015	Kaba Micro Code EB0015	THXXXXXX	015		
	005	Kaba Micro Code EB0005	THXXXXXX	005	016	Kaba Micro Code EB0016	THXXXXXX	016		
	006	Kaba Micro Code EB0006	THXXXXXX	006	017	Kaba Micro Code EB0017	THXXXXXX	017		
	007	Kaba Micro Code EB0007	THXXXXXX	007	018	Kaba Micro Code EB0018	THXXXXXX	018		
	008	Kaba Micro Code EB0008	THXXXXXX	008	019	Kaba Micro Code EB0019	THXXXXXX	019		
	009	Kaba Micro Code EB0009	THXXXXXX	009	020	Kaba Micro Code EB0020	THXXXXXX	020		
	010	Kaba Micro Code EB0010	THXXXXXX	010	999	Mixed differs	THXXXXXX	999		
	011	Kaba Micro Code EB0011	THXXXXXX	011						
Contact block, gold Position 1	XX	No contact block	Terminals				Part No.			
	A1	NO	2.8 × 0.5 mm				TH593566020			
	A9	NO	Insulated faston				TH593560020			
	A8	NO	Solder				TH593561020			
	B1	NC	2.8 × 0.5 mm				TH593566050			
	B9	NC	Insulated faston				TH593560050			
	B8	NC	Solder				TH593561050			
	C1	1 NO + 1 NC	2.8 × 0.5 mm				TH593566000			
	C9	1 NO + 1 NC	Insulated faston				TH593560000			
	C8	1 NO + 1 NC	Solder				TH593561000			
	D1	2 NO + 2 NC	2.8 × 0.5 mm				TH593567000			
	D9	2 NO + 2 NC	Insulated faston				TH593563000			
	D8	2 NO + 2 NC	Solder				TH593564000			
Contact block, gold Position 2	XX	No contact block	Terminals				Part No.			
	A1	NO	2.8 × 0.5 mm				TH593566020			
	A9	NO	Insulated faston				TH593560020			
	A8	NO	Solder				TH593561020			
	B1	NC	2.8 × 0.5 mm				TH593566050			
	B9	NC	Insulated faston				TH593560050			
	B8	NC	Solder				TH593561050			
	C1	1 NO + 1 NC	2.8 × 0.5 mm				TH593566000			
	C9	1 NO + 1 NC	Insulated faston				TH593560000			
	C8	1 NO + 1 NC	Solder				TH593561000			
	D1	2 NO + 2 NC	2.8 × 0.5 mm				TH593567000			
	D9	2 NO + 2 NC	Insulated faston				TH593563000			
	D8	2 NO + 2 NC	Solder				TH593564000			
Bezel	A	18 mm × 24 mm plastic				IP40	TH493060000	IP65	TH593060000	
	B	18 mm × 18 mm plastic					TH493062000		TH593062000	
	D	Ø 18 mm plastic					TH493064000		TH593064000	
	E	Ø 25 mm aluminum (Factory fitted)								

The keyswitch cannot be installed without a bezel. The IP40 bezels are interchangeable before installation. Contact blocks will be supplied unassembled.

Ordering Reference

Basic type	TK2				Example: TK2		1	E3A	001	A1	A1	A	
Panel cut-out	1	Ø 16.2 mm											
Key position / function	E3A	3 Position; IP40; Kaba Micro; Key removable P0 + P1 + P2			Latching P1 + P2		TH548050XXX						
	F3A	3 Position; IP40; Kaba Micro; Key removable P0 + P2			Latching P1 + P2		TH548051XXX						
	G3A	3 Position; IP40; Kaba Micro; Key removable P2			Latching P1 + P2		TH548052XXX						
	H3A	3 Position; IP40; Kaba Micro; Key removable P0			Latching P1 + P2		TH548053XXX						
	I3A	3 Position; IP40; Kaba Micro; Key removable P0			Momentary P1 + P2		TH548054XXX						
	J3A	3 Position; IP40; Kaba Micro; Key removable P0 + P2			Momentary P1 + Latching P2		TH548055XXX						
	K3A	3 Position; IP40; Kaba Micro; Key removable P2			Momentary P1 + Latching P2		TH548056XXX						
	L3A	3 Position; IP40; Kaba Micro; Key removable P0			Momentary P1 + Latching P2		TH548057XXX						
	M3A	3 Position; IP40; Kaba Micro; Key removable P0			Latching P1 + Momentary P2		TH548058XXX						
	N3A	3 Position; IP40; Kaba Micro; Key removable P0 + P1			Latching P1 + Momentary P2		TH548059XXX						
	O3A	3 Position; IP40; Kaba Micro; Key removable P1 + P2			Latching P1 + P2		TH548060XXX						
	P3A	3 Position; IP40; Kaba Micro; Key removable P0 + P1			Latching P1 + P2		TH548061XXX						
	Q3A	3 Position; IP40; Kaba Micro; Key removable P1			Latching P1 + Momentary P2		TH548062XXX						
	R3A	3 Position; IP40; Kaba Micro; Key removable P1			Latching P1 + P2		TH548063XXX						
	E3B	3 Position; IP65; Kaba Micro; Key removable P0 + P1 + P2			Latching P1 + P2		TH548150XXX						
	F3B	3 Position; IP65; Kaba Micro; Key removable P0 + P2			Latching P1 + P2		TH548151XXX						
	G3B	3 Position; IP65; Kaba Micro; Key removable P2			Latching P1 + P2		TH548152XXX						
	H3B	3 Position; IP65; Kaba Micro; Key removable P0			Latching P1 + P2		TH548153XXX						
	I3B	3 Position; IP65; Kaba Micro; Key removable P0			Momentary P1 + P2		TH548154XXX						
	J3B	3 Position; IP65; Kaba Micro; Key removable P0 + P2			Momentary P1 + Latching P2		TH548155XXX						
	K3B	3 Position; IP65; Kaba Micro; Key removable P2			Momentary P1 + Latching P2		TH548156XXX						
	L3B	3 Position; IP65; Kaba Micro; Key removable P0			Momentary P1 + Latching P2		TH548157XXX						
	M3B	3 Position; IP65; Kaba Micro; Key removable P0			Latching P1 + Momentary P2		TH548158XXX						
	N3B	3 Position; IP65; Kaba Micro; Key removable P0 + P1			Latching P1 + Momentary P2		TH548159XXX						
	O3B	3 Position; IP65; Kaba Micro; Key removable P1 + P2			Latching P1 + P2		TH548160XXX						
	P3B	3 Position; IP65; Kaba Micro; Key removable P0 + P1			Latching P1 + P2		TH548161XXX						
	Q3B	3 Position; IP65; Kaba Micro; Key removable P1			Latching P1 + Momentary P2		TH548162XXX						
	R3B	3 Position; IP65; Kaba Micro; Key removable P1			Latching P1 + P2		TH548163XXX						
	Key code number	001	Kaba Micro Code EB0001	THXXXXXX	001	012	Kaba Micro Code EB0012	THXXXXXX	012				
		002	Kaba Micro Code EB0002	THXXXXXX	002	013	Kaba Micro Code EB0013	THXXXXXX	013				
		003	Kaba Micro Code EB0003	THXXXXXX	003	014	Kaba Micro Code EB0014	THXXXXXX	014				
		004	Kaba Micro Code EB0004	THXXXXXX	004	015	Kaba Micro Code EB0015	THXXXXXX	015				
005		Kaba Micro Code EB0005	THXXXXXX	005	016	Kaba Micro Code EB0016	THXXXXXX	016					
006		Kaba Micro Code EB0006	THXXXXXX	006	017	Kaba Micro Code EB0017	THXXXXXX	017					
007		Kaba Micro Code EB0007	THXXXXXX	007	018	Kaba Micro Code EB0018	THXXXXXX	018					
008		Kaba Micro Code EB0008	THXXXXXX	008	019	Kaba Micro Code EB0019	THXXXXXX	019					
009		Kaba Micro Code EB0009	THXXXXXX	009	020	Kaba Micro Code EB0020	THXXXXXX	020					
010		Kaba Micro Code EB0010	THXXXXXX	010	999	Mixed differs	THXXXXXX	999					
011		Kaba Micro Code EB0011	THXXXXXX	011									
Contact block, gold Position 1	XX	No contact block	Terminals		Part No.								
	A1	NO	2.8 × 0.5 mm		TH593566020								
	A9	NO	Insulated faston		TH593560020								
	A8	NO	Solder		TH593561020								
	B1	NC	2.8 × 0.5 mm		TH593566050								
	B9	NC	Insulated faston		TH593560050								
	B8	NC	Solder		TH593561050								
	C1	1 NO + 1 NC	2.8 × 0.5 mm		TH593566000								
	C9	1 NO + 1 NC	Insulated faston		TH593560000								
	C8	1 NO + 1 NC	Solder		TH593561000								
	D1	2 NO + 2 NC	2.8 × 0.5 mm		TH593567000								
	D9	2 NO + 2 NC	Insulated faston		TH593563000								
	D8	2 NO + 2 NC	Solder		TH593564000								
	Contact block, gold Position 2	XX	No contact block	Terminals		Part No.							
A1		NO	2.8 × 0.5 mm		TH593566020								
A9		NO	Insulated faston		TH593560020								
A8		NO	Solder		TH593561020								
B1		NC	2.8 × 0.5 mm		TH593566050								
B9		NC	Insulated faston		TH593560050								
B8		NC	Solder		TH593561050								
C1		1 NO + 1 NC	2.8 × 0.5 mm		TH593566000								
C9		1 NO + 1 NC	Insulated faston		TH593560000								
C8		1 NO + 1 NC	Solder		TH593561000								
D1		2 NO + 2 NC	2.8 × 0.5 mm		TH593567000								
D9		2 NO + 2 NC	Insulated faston		TH593563000								
D8		2 NO + 2 NC	Solder		TH593564000								
Bezel		A	18 mm × 24 mm plastic		IP40	IP65							
	B	18 mm × 18 mm plastic		TH493060000	TH593060000								
	D	Ø 18 mm plastic		TH493062000	TH593062000								
				TH493064000	TH593064000								

The keyswitch cannot be installed without a bezel. The IP40 bezels are interchangeable before installation. Contact blocks will be supplied unassembled.

Ordering Reference

Basic type	TK2		Example: TK2	2	E3C	001	A1	A1	E
Panel cut-out	2	Ø 22.5 mm							
Key position / function	E3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P0 + P1 + P2	Latching P1 + P2	TH544050XXX					
	F3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P0 + P2	Latching P1 + P2	TH544051XXX					
	G3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P2	Latching P1 + P2	TH544052XXX					
	H3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P0	Latching P1 + P2	TH544053XXX					
	I3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P0	Momentary P1 + P2	TH544054XXX					
	J3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P0 + P2	Momentary P1 + Latching P2	TH544055XXX					
	K3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P2	Momentary P1 + Latching P2	TH544056XXX					
	L3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P0	Momentary P1 + Latching P2	TH544057XXX					
	M3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P0	Latching P1 + Momentary P2	TH544058XXX					
	N3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P0 + P1	Latching P1 + Momentary P2	TH544059XXX					
	O3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P1 + P2	Latching P1 + P2	TH544060XXX					
	P3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P0 + P1	Latching P1 + P2	TH544061XXX					
	Q3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P1	Latching P1 + Momentary P2	TH544062XXX					
	R3C	3 Position; Ø 25 mm Alum. bezel IP65; Kaba Micro; Key removable P1	Latching P1 + P2	TH544063XXX					
Key code number (XXX)	001	Kaba Micro Code EB0001		THXXXXXX					
	002	Kaba Micro Code EB0002		THXXXXXX					
	003	Kaba Micro Code EB0003		THXXXXXX					
	004	Kaba Micro Code EB0004		THXXXXXX					
	005	Kaba Micro Code EB0005		THXXXXXX					
	006	Kaba Micro Code EB0006		THXXXXXX					
	007	Kaba Micro Code EB0007		THXXXXXX					
	008	Kaba Micro Code EB0008		THXXXXXX					
	009	Kaba Micro Code EB0009		THXXXXXX					
	010	Kaba Micro Code EB0010		THXXXXXX					
	011	Kaba Micro Code EB0011		THXXXXXX					
	012	Kaba Micro Code EB0012		THXXXXXX					
	013	Kaba Micro Code EB0013		THXXXXXX					
	014	Kaba Micro Code EB0014		THXXXXXX					
	015	Kaba Micro Code EB0015		THXXXXXX					
	016	Kaba Micro Code EB0016		THXXXXXX					
	017	Kaba Micro Code EB0017		THXXXXXX					
	018	Kaba Micro Code EB0018		THXXXXXX					
	019	Kaba Micro Code EB0019		THXXXXXX					
	020	Kaba Micro Code EB0020		THXXXXXX					
	999	Mixed differs		THXXXXXX					
Contact block, gold Position 1	XX	No contact block	Terminals	Part No.					
	A1	NO	2.8 × 0.5 mm	TH593566020					
	A9	NO	Insulated faston	TH593566020					
	A8	NO	Solder	TH593561020					
	B1	NC	2.8 × 0.5 mm	TH593566050					
	B9	NC	Insulated faston	TH593566050					
	B8	NC	Solder	TH593561050					
	C1	1 NO + 1 NC	2.8 × 0.5 mm	TH593566000					
	C9	1 NO + 1 NC	Insulated faston	TH593566000					
	C8	1 NO + 1 NC	Solder	TH593561000					
	D1	2 NO + 2 NC	2.8 × 0.5 mm	TH593567000					
	D9	2 NO + 2 NC	Insulated faston	TH593563000					
	D8	2 NO + 2 NC	Solder	TH593564000					
Contact block, gold Position 2	XX	No contact block	Terminals	Part No.					
	A1	NO	2.8 × 0.5 mm	TH593566020					
	A9	NO	Insulated faston	TH593566020					
	A8	NO	Solder	TH593561020					
	B1	NC	2.8 × 0.5 mm	TH593566050					
	B9	NC	Insulated faston	TH593566050					
	B8	NC	Solder	TH593561050					
	C1	1 NO + 1 NC	2.8 × 0.5 mm	TH593566000					
	C9	1 NO + 1 NC	Insulated faston	TH593566000					
	C8	1 NO + 1 NC	Solder	TH593561000					
	D1	2 NO + 2 NC	2.8 × 0.5 mm	TH593567000					
	D9	2 NO + 2 NC	Insulated faston	TH593563000					
	D8	2 NO + 2 NC	Solder	TH593564000					
Bezel	E	Ø 25 mm (Factory fitted)							

The keyswitch cannot be installed without a bezel. Contact blocks will be supplied unassembled.

E1

E1

Panel cut-out (mm) $\varnothing$ 15.1 × 15.1

Characteristics

- tamper proof
- 2 positions
- key trapping options
- gold-plated contacts
- PCB Terminals

Rating 250 VAC, 100 mA

Dimensions (mm) 18 × 16

Actuator ■ plastic key

Approvals none



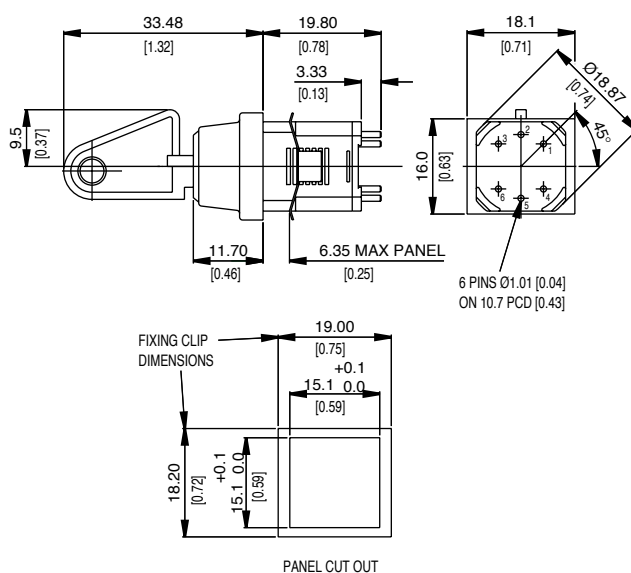
Preferred Range

Ordering Reference	Terminal	Circuit	Actuator	Contacts	Electrical rating
E1ACAAAE	Pins	2 pole CO	Key	Gold-plated	250 VAC, 100 mA

Specifications

Key	Glass-fibre reinforced nylon
Body	Glass-fibre reinforced nylon
Springs	Stainless steel
Contacts	Moving - gold-plated phosphor bronze, Fixed - gold-plated brass
Terminals	1.01 mm (0.04 in) dia × 3.3 mm (0.13 in) gold-plated brass
Temperature range °C	-20°C to +60°C
Mechanical life	50,000 operations (minimum)
Mounting	Retaining clip
Actuators	Key
Switching function	Double pole change-over, three circuit selector
Key indexing	90°

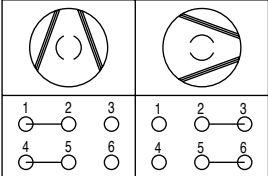
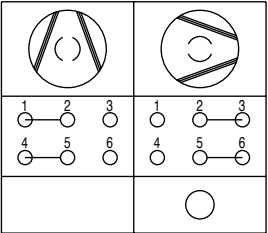
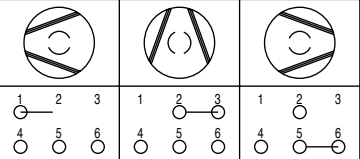
Dimensions



Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
250 VAC	100 mA	-	-	General rating - 50,000 operations
0-15 VDC	100 mA	-	-	General rating - 50,000 operations
15-30 VDC	100 mA	-	-	General rating - 50,000 operations

Operating Characteristics

Switching function	Reference	Actuator Type	Body style (mm)	Key trapping	Diagram
Double pole change-over	E1AAAAAE	Key	A - 18 × 16	No	
Double pole change-over	E1ACAAAE	Key	A - 18 × 16	Yes	
Three circuit selector	E1AAAAAJ	Key	A - 18 × 16	No	

Ordering Reference

Basic type	E1	Example: E1	A	A	A	A	A	E
Key	A	Standard key						
Key trapping	A	Key removable in all positions						
	C	Key trapped horizontally, right						
Body style	A	18.0 mm (0.710 in) × 16.0 mm (0.630 in) rectangular bezel						
Body color	A	Black						
Terminal	A	1.01 mm (0.040 in) dia × 3.30 mm (0.130 in)						
Switching function	E	Double pole change-over						
	J	Three circuit selector						

M1

M1

Panel cut-out (mm) $\varnothing 15.1 \times 15.1$

Characteristics

- double pole change-over or three circuit selector switching functions
- key trapping option
- two body style options
- gold-plated contacts
- PCB Terminals

Rating 250 VAC, 100 mA

Dimensions (mm)

18 × 16
body style A

18 × 18
body style E

Actuator ■ key (common or differs)

Approvals none



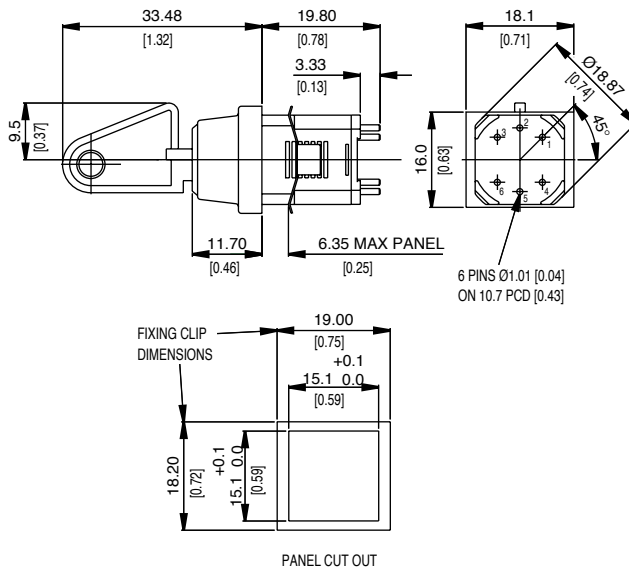
Preferred Range

Ordering Reference	Terminal	Circuit	Actuator	Contacts	Electrical rating
M1HAAAAE	Pins	2 pole CO	Key	Gold-plated	250 VAC, 100 mA
M1HAEAAE	Pins	2 pole CO	Key	Gold-plated	250 VAC, 100 mA
M1HAAAAJ	Pins	3 circuit selector	Key	Gold-plated	250 VAC, 100 mA

Specifications

Key	Nickel silver
Body	Glass-fibre reinforced nylon
Springs	Stainless steel
Contacts	Moving - gold-plated phosphor bronze, Fixed - gold-plated brass
Terminals	1.01 mm (0.04 in) dia × 3.3 mm (0.13 in) gold-plated brass
Temperature range °C	-20°C to +60°C
Mechanical life	50,000 operations (minimum)
Mounting	Retaining clip
Actuators	Key
Switching function	Double pole change-over, three circuit selector
Key indexing	90°

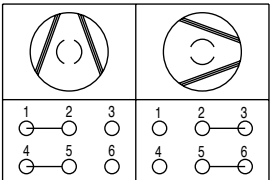
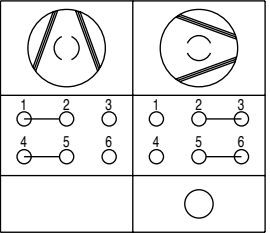
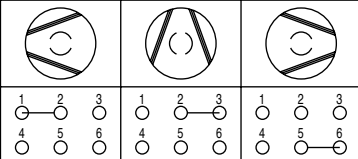
Dimensions



Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
250 VAC	100 mA	-	-	General rating - 50,000 operations
0-15 VDC	100 mA	-	-	General rating - 50,000 operations
15-30 VDC	100 mA	-	-	General rating - 50,000 operations

Operating Characteristics

Switching function	Reference	Actuator		Body style (mm)	Key trapping	Diagram
		Type	Code			
Double pole change-over	M1BAAAAE	Key	001	A - 18 × 16	No	
	M1HAAAAE	Key	007	A - 18 × 16	No	
	M1HAEAAE	Key	007	E - 18 × 18	No	
	M1MAAAAAE	Key	Production run key coding	A - 18 × 16	No	
	M1MAEAAE	Key	Production run key coding	E - 18 × 18	No	
Double pole change-over	M1MCAAAE	Key	Production run key coding	A - 18 × 16	Yes	
	M1MCEAAE	Key	Production run key coding	E - 18 × 18	Yes	
Three circuit selector	M1HAAAAJ	Key	007	A - 18 × 16	No	
	M1HAEAAJ	Key	007	E - 18 × 18	No	
	M1MAAAAAJ	Key	Production run key coding	A - 18 × 16	No	
	M1MAEAAJ	Key	Production run key coding	E - 18 × 18	No	

Ordering Reference

Basic type	M1	Example: M1 B A A A A E				
Keycode	B 001 key H 007 key M Production run key coding					
Key trapping	A Key removable in all positions C Key trapped horizontally, right					
Body style	A 18.0 mm (0.710 in) × 16.0 mm (0.630 in) rectangular bezel E 18.0 mm (0.710 in) square bezel					
Body color	A Black					
Terminal	A 1.01 mm (0.040 in) dia × 3.30 mm (0.130 in)					
Switching function	E Double pole change-over J Three circuit selector					

K2

K2	
Panel cut-out (mm)	Ø 19.1
Characteristics	■ choice of off-on or change-over center off or spring return options ■ key trapping option ■ solder terminals
Rating	up to 250 VAC, 2 A
Dimensions (mm)	Ø 22
Actuator	■ key (common or differs)
Approvals	UL and CSA



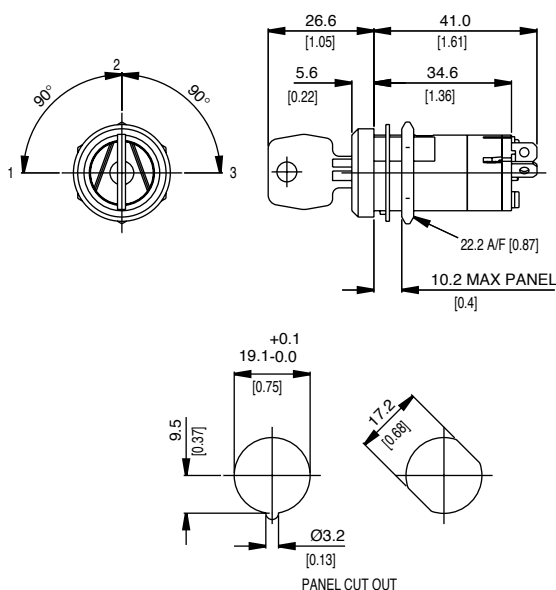
Preferred Range

Ordering Reference	Terminal	Circuit	Actuator	Contacts	Electrical rating
K23FBA201	Screws	2 pole off-on	Key	Ag	Up to 250 VAC, 2 A

Specifications

Key	Nickel silver
Body	Glass-fibre reinforced nylon
Springs	Stainless steel
Contacts	Silver
Terminals	4.8 × 0.8 mm (0.19 × 0.032 in) faston (faston) - silver-plated brass
Temperature range °C	-20°C to +85°C
Mechanical life	50,000 operations (minimum)
Mounting	Locknut and washer
Actuators	General duty keylocks
Switching function	Off-on, change-over (center off)
Key indexing	90°

Dimensions

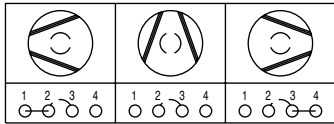
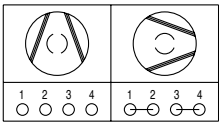


Assembled Keyswitch

Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
125 VAC	4 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
250 VAC	2 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
12 VDC	10	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations

Operating Characteristics

Switching function	Reference	Actuator Type	Code	Key trapping	Diagram
1 pole change-over with center off	K23FBA123	Key	001	No	
2 pole off-on	K23FBA201	Key	001	No	

Ordering Reference

Basic type	K2	Example: K2	3F	B	A	2	01
Actuators	3F Key - general duty						
Keycode	B 001 key						
Key trapping	A Key removable in all positions C Key trapped horizontally; right						
Number of poles	1 1 pole 2 2 poles						
Switching function	01 Off-on 23 Change-over with center off						

P2

P2	
Panel cut-out (mm)	Ø 19.1
Characteristics	■ up to 12 contact pairs ■ 2 security options with key actuation ■ from 2 to 4 switch positions ■ key trapping option ■ solder terminals
Rating	250 VAC, 2 A
Dimensions (mm)	Ø 22
Actuator	■ key (common or differs)
Approvals	UL (optional)



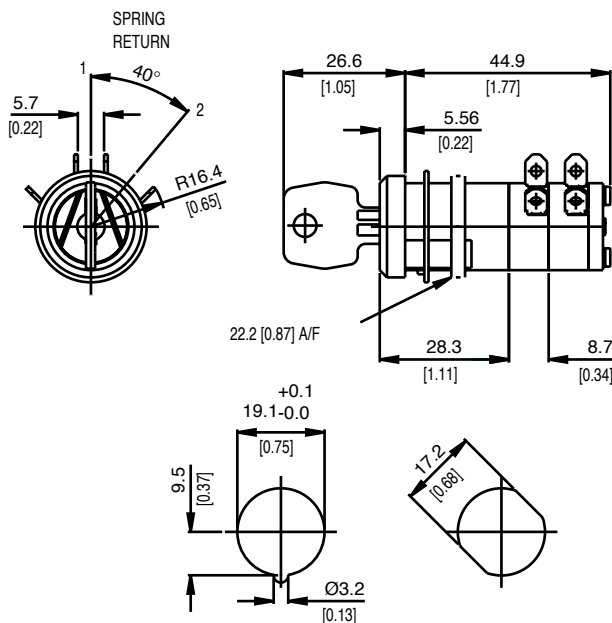
Preferred Range

Ordering Reference	Terminal	Circuit	Actuator	Contacts	Electrical rating
P23FBA206	Screws	2 pole CO	Key	Ag	Up to 250 VAC, 2 A
P23FBA209	Screws	2 pole CO	Key	Ag	Up to 250 VAC, 2 A
P23FBC209	Screws	2 pole CO	Key	Ag	Up to 250 VAC, 2 A
P23FMA209	Screws	2 pole CO	Key	Ag	Up to 250 VAC, 2 A

Specifications

Key	Nickel silver
Body	Glass-fibre reinforced nylon
Springs	Stainless steel
Contacts	Silver
Terminals	4.8 × 0.8 mm (0.19 × 0.032 in) faston (faston) - silver-plated brass
Temperature range °C	-20°C to +85°C
Mechanical life	50,000 operations (minimum)
Mounting	Locknut and washer
Actuators	General duty keylocks
Switching function	Change-over (spring return), change-over (separate circuits)
Key indexing	90°

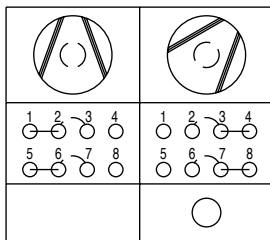
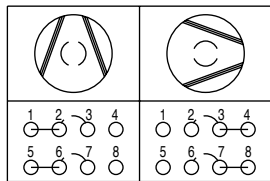
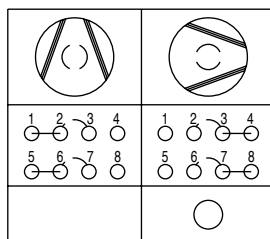
Dimensions



Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
125 VAC	4 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
250 VAC	2 (0.75 pf)	2	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
12 VDC	10	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations

Operating Characteristics

Switching function	Reference	Actuator	Code	Key trapping	Diagram
		Type			
2 pole change-over, spring return	P23FBA206 P23FMA206	Key Key	001 Production run key coding	No No	
2 pole change-over, separate circuits	P23FBA209 P23FMA209	Key Key	001 Production run key coding	No No	
2 pole change-over, separate circuits	P23FBC209 P23DMC209	Key Key - increased security	001 Production run key coding	Yes Yes	

Ordering Reference

Basic type	P2	Example: P2	3F	B	A	2	06
Actuators	3F Key - general duty						
Keycode	B 001 key M Production run key coding						
Key trapping	A Key removable in all positions C Key trapped horizontally, right						
Number of poles	2 2 poles						
Switching function	06 Change-over with spring return 09 Change-over with separate circuits						

P5

P5	
Panel cut-out (mm)	Ø 20.6
Characteristics	■ high electrical rating ■ key trapping option ■ choice of off-on, change-over with spring return or change-over with separate circuits
Rating	up to 125 VAC, 10 A up to 250 VAC, 5 A
Dimensions (mm)	Ø 38.1 × 45.7 off-on Ø 38.1 × 58.4 change-over
Actuator	■ key (common or different)
Approvals	UL and CSA



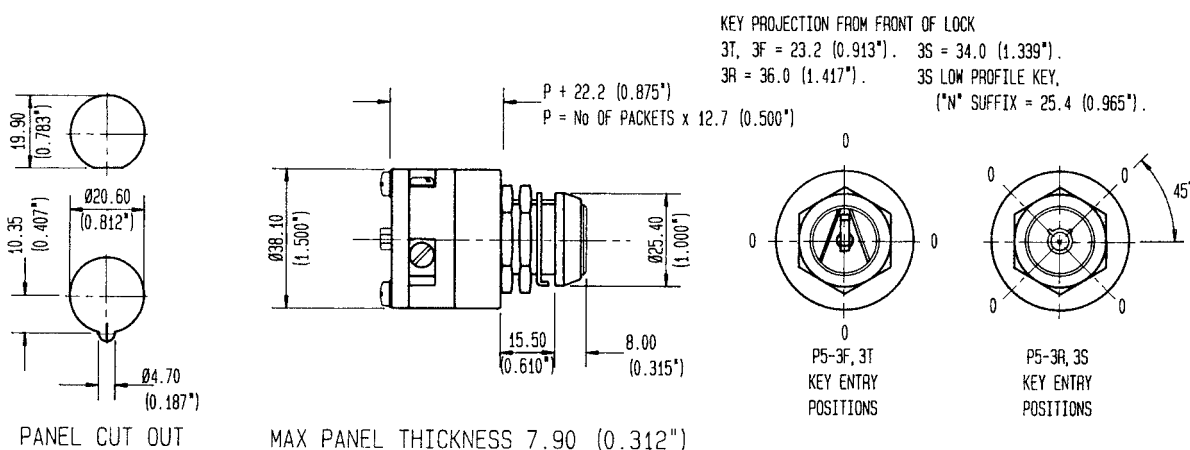
Preferred Range

Ordering Reference	Terminal	Circuit	Actuator	Contacts	Electrical rating
P53FBA201	Screws	2 pole off-on	Key	Ag	Up to 125 VAC, 10 A Up to 250 VAC, 5 A

Specifications

Key	Nickel silver
Body	Phenolic
Springs	Stainless steel
Contacts	Silver
Terminals	4BA screw - silver-plated brass
Temperature range °C	-20°C to +85°C
Mechanical life	25,000 operations (minimum)
Mounting	Locknut and washer
Actuator	Key
Switching function	Off-on, change-over (spring return), change-over (separate circuits)
Key indexing	90°

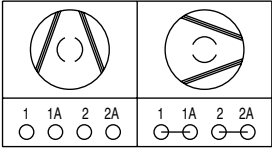
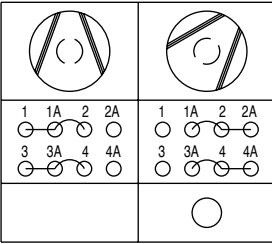
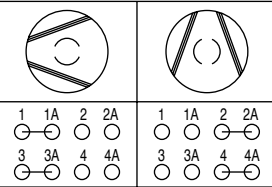
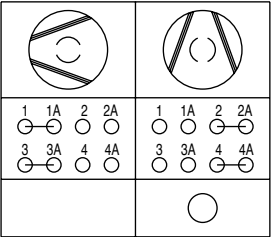
Dimensions



Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
125 VAC	10 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
250 VAC	5 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
24 VDC	15	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations

Operating Characteristics

Switching function	Reference	Actuator Type	Code	Key trapping	Diagram
2 pole off-on	P53FBA201	Key	001	No	
2 pole change-over, spring return	P53FBA206 P53FMA206	Key Key	001 Production run	No No	
2 pole change-over, separate circuits	P53FBA209 P53FMA209	Key Key	001 Production run	No No	
2 pole change-over, separate circuits	P53FBB209 P53FMB209	Key Key	001 Production run	Yes Yes	

Ordering Reference

Basic type	P5	Example: P5	3F	B	A	2	01
Actuators	3F	Key - general duty					
Keycode	B	001 key					
	M	Production run key coding					
Key trapping	A	Key removable in all positions					
	B	Key trapped vertically, up					
Number of poles	2	2 poles					
Switching function	01	Off-on					
	06	Change-over with spring return					
	09	Change-over with separate circuits					

TR2

www.ermec.com

TR2

Panel cut-out (mm) Ø 16.2 or Ø 22.5

- Characteristics
- 2 and 3 position
 - sealed IP40 or IP65
 - plastic or aluminum bezels
 - NO, NC
 - gold plated, single or double pole, contact blocks
 - key trapping options

Rating 250 VAC, 5 A

Dimensions (mm)
18 × 24
18 × 18
Ø 18
Ø 25

Actuator ■ black knob, with white indicating bar

Approvals UL, CSA, VDE



Popular products

Ordering Reference	Panel cut-out (mm)	Function	Actuator size (mm)	Environmental protection
TR21A2AC1C1A	Ø 16.2	2 Position	18 × 24	IP40
TR22A2CC1C1E	Ø 22.5	2 Position	Ø 25	IP65
TR21C2AC1C1A	Ø 16.2	3 Position	18 × 24	IP40
TR22C2CC1C1E	Ø 22.5	3 Position	Ø 25	IP65

Specifications

Mechanism	Knob actuated
Mounting	Central fixing with metal lock nut
Protection	IP40 or IP65
Bezel material	Thermoplastic or anodized aluminum alloy
Temperature range °C	-25°C to +85°C
Mechanical life	10 ⁶ cycles
Contact block	Slide-on assembly by the user
Contact block housing	Self-extinguishing duroplastic (UL 94 V0)
Terminal material	Silver alloy with 0.2 µm silver plating, 0.4 µm gold plating
Contact resistance	<30 mOhm
Number of contact blocks	User configurable NO or NC types up to a maximum of 2 double contact blocks
Terminals	Patented flexible solder – suitable for wire diameter 1 × 1.00 mm ² (braided), 2 × 0.75 mm (stranded) Faston - 2.8mm × 0.5mm
Vibration resistance	1.5 mm pp amplitude at 55 Hz

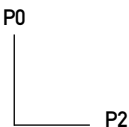
Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load (A)	Approval
250 VAC	5.0 (0.7 pf)		UL, CSA, VDE - max. admissible circuit breaker C6A
12 VDC	5.0	3.0	General rating
24 VDC	4.0	2.0	General rating
36 VDC	3.0	1.7	General rating
48 VDC	2.0	1.5	General rating
60 VDC	1.5	1.2	General rating
125 VDC	0.5	0.3	General rating
250 VDC	0.3	0.2	General rating

Electrical life 50,000 cycles at 5A, 250 VAC, 0.7 pf

Rotary positions/
function

2 Positions



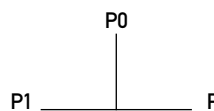
A



B



3 Positions



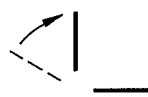
C



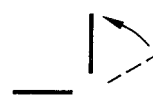
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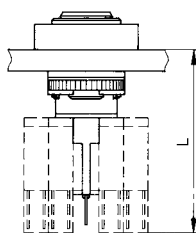
E



F



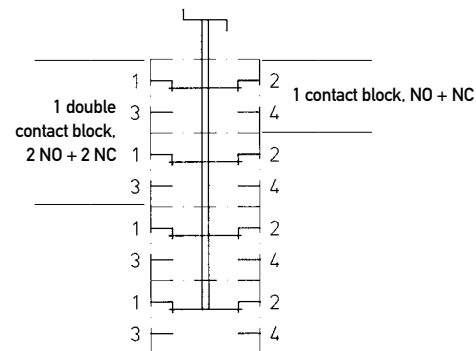
Dimensions



Length in mm (with contact block)

plastic bezels 43
aluminum bezels 42

Circuit diagram (2 double contact blocks)



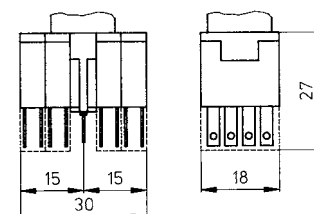
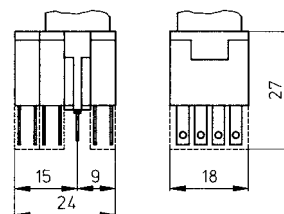
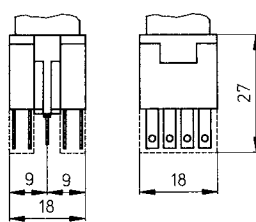
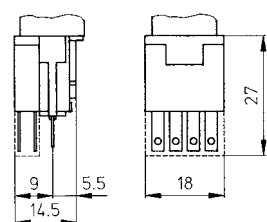
Contact blocks

1 contact block

2 contact blocks

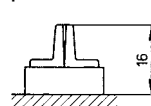
1 contact block +
1 double contact block

2 double contact blocks

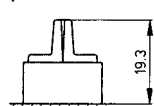


Bezel and rotary knob height

plastic bezel IP40

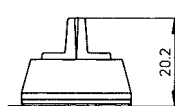


plastic bezel IP65

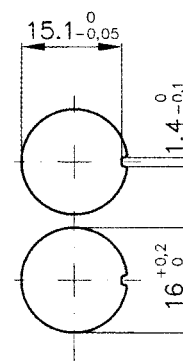


Panel cut-out
16.2 mm $\pm$ 0.1 mm
(plastic)

aluminum bezel



Panel cut-out
22.5 mm $\pm$ 0.1 mm
(aluminum)



Ordering Reference

Basic type	TR2				Example: TR2	1	A2A	A1	A1	A
Panel cut-out	1	Ø 16.2 mm for plastic bezel rotary switches								
	2	Ø 22.5 mm for Aluminum bezel rotary switches								
Switch body	A2A	2 Positions; IP40;	Momentary	TH508021000						
16.2 mm	B2A	2 Positions; IP40;	Latching	TH508020000						
panel cut-out	A2B	2 Positions; IP65;	Momentary	TH508026000						
	B2B	2 Positions; IP65;	Latching	TH508025000						
22.5 mm	A2C	2 Positions; Ø 25 mm Aluminum bezel IP65	Momentary	TH508031000						
panel cut-out	B2C	2 Positions; Ø 25 mm Aluminum bezel IP65	Latching	TH508030000						
Contact block, gold	XX	No contact block								
Position 1	A1	NO	2.8 × 0.5 mm	TH593566020						
	A9	NO	Insulated faston	TH593560020						
	A8	NO	Solder	TH593561020						
	B1	NC	2.8 × 0.5 mm	TH593566050						
	B9	NC	Insulated faston	TH593560050						
	B8	NC	Solder	TH593561050						
	C1	1 NO + 1 NC	2.8 × 0.5 mm	TH593566000						
	C9	1 NO + 1 NC	Insulated faston	TH593560000						
	C8	1 NO + 1 NC	Solder	TH593561000						
	D1	2 NO + 2 NC	2.8 × 0.5 mm	TH593567000						
	D9	2 NO + 2 NC	Insulated faston	TH593563000						
	D8	2 NO + 2 NC	Solder	TH593564000						
Contact block, gold	XX	No contact block								
Position 2	A1	NO	2.8 × 0.5 mm	TH593566020						
	A9	NO	Insulated faston	TH593560020						
	A8	NO	Solder	TH593561020						
	B1	NC	2.8 × 0.5 mm	TH593566050						
	B9	NC	Insulated faston	TH593560050						
	B8	NC	Solder	TH593561050						
	C1	1 NO + 1 NC	2.8 × 0.5 mm	TH593566000						
	C9	1 NO + 1 NC	Insulated faston	TH593560000						
	C8	1 NO + 1 NC	Solder	TH593561000						
	D1	2 NO + 2 NC	2.8 × 0.5 mm	TH593567000						
	D9	2 NO + 2 NC	Insulated faston	TH593563000						
	D8	2 NO + 2 NC	Solder	TH593564000						
Bezel	A	18 mm × 24 mm plastic	IP40	TH493060000	IP65	TH593060000				
	B	18 mm × 18 mm plastic		TH493062000		TH593062000				
	D	Ø 18 mm plastic		TH493064000		TH593064000				
	E	Ø 25 mm aluminum								

The rotary switch cannot be installed without a bezel. The IP40 bezels are interchangeable before installation.

Once an IP65 bezel has been assembled it cannot be removed.

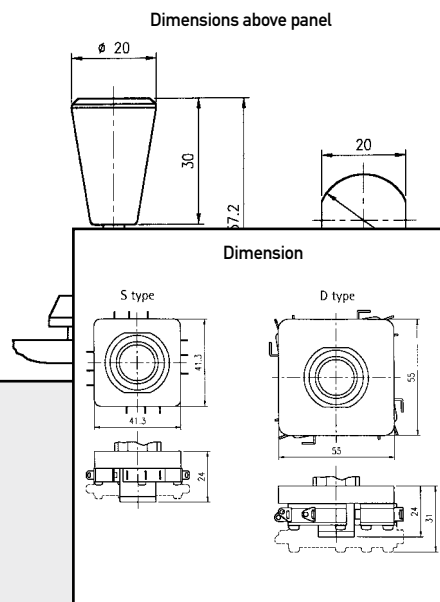
Contact blocks will be supplied unassembled.

Ordering Reference

Basic type	TR2		Example: TR2	1	C2A	C2C	A1	A1	A
Panel cut-out	1	Ø 16.2 mm for plastic bezel rotary switches							
	2	Ø 22.5 mm for Aluminum bezel rotary switches							
Switch body	C2A	3 Positions; IP40;	Latching P0 + P1 + P2	TH508040000					
16.2 mm	D2A	3 Positions; IP40;	Momentary P1 + P2	TH508041000					
Panel cut-out	E2A	3 Positions; IP40;	Momentary P1 Latching P0 + P2	TH508042000					
	F2A	3 Positions; IP40;	Momentary P2 Latching P0 + P1	TH508043000					
	C2B	3 Positions; IP65;	Latching P0 + P1 + P2	TH508045000					
	D2B	3 Positions; IP65;	Momentary P1 + P2	TH508046000					
	E2B	3 Positions; IP65;	Momentary P1 Latching P0 + P2	TH508047000					
	F2B	3 Positions; IP65;	Momentary P2 Latching P0 + P1	TH508048000					
22.5 mm	C2C	3 Positions; Ø 25 mm Aluminum bezel IP65	Latching P0 + P1 + P2	TH508060000					
Panel cut-out	D2C	3 Positions; Ø 25 mm Aluminum bezel IP65	Momentary P1 + P2	TH508061000					
	E2C	3 Positions; Ø 25 mm Aluminum bezel IP65	Momentary P1 Latching P0 + P2	TH508062000					
	F2C	3 Positions; Ø 25 mm Aluminum bezel IP65	Momentary P2 Latching P0 + P1	TH508063000					
Contact block, gold	XX	No contact block							
Position 1	A1	NO	2.8 × 0.5 mm	TH593566020					
	A9	NO	Insulated faston	TH593560020					
	A8	NO	Solder	TH593561020					
	B1	NC	2.8 × 0.5 mm	TH593566050					
	B9	NC	Insulated faston	TH593560050					
	B8	NC	Solder	TH593561050					
	C1	1 NO + 1 NC	2.8 × 0.5 mm	TH593566000					
	C9	1 NO + 1 NC	Insulated faston	TH593560000					
	C8	1 NO + 1 NC	Solder	TH593561000					
	D1	2 NO + 2 NC	2.8 × 0.5 mm	TH593567000					
	D9	2 NO + 2 NC	Insulated faston	TH593563000					
	D8	2 NO + 2 NC	Solder	TH593564000					
Contact block, gold	XX	No contact block							
Position 2	A1	NO	2.8 × 0.5 mm	TH593566020					
	A9	NO	Insulated faston	TH593560020					
	A8	NO	Solder	TH593561020					
	B1	NC	2.8 × 0.5 mm	TH593566050					
	B9	NC	Insulated faston	TH593560050					
	B8	NC	Solder	TH593561050					
	C1	1 NO + 1 NC	2.8 × 0.5 mm	TH593566000					
	C9	1 NO + 1 NC	Insulated faston	TH593560000					
	C8	1 NO + 1 NC	Solder	TH593561000					
	D1	2 NO + 2 NC	2.8 × 0.5 mm	TH593567000					
	D9	2 NO + 2 NC	Insulated faston	TH593563000					
	D8	2 NO + 2 NC	Solder	TH593564000					
Bezel	A	18 mm × 24 mm plastic	IP40	TH493060000	IP65	TH593060000			
	B	18 mm × 18 mm plastic		TH493062000		TH593062000			
	D	Ø 18 mm plastic		TH493064000		TH593064000			
	E	Ø 25 mm aluminum							

The rotary switch cannot be installed without a bezel. The IP40 bezels are interchangeable before installation.
Once an IP65 bezel has been assembled it cannot be removed.
Contact blocks will be supplied unassembled.

Joystick



700

Panel cut-out (mm) Ø 22 × 20

Characteristics ■ single or double pole
 ■ choice of directional gating options
 ■ miniature or subminiature microswitch types

Rating up to 15 A, 250 VAC, miniature microswitches (380 series)
 up to 6 A, 250 VAC, subminiature microswitches (290 series)

Dimensions (mm) 55 × 55 × 55.2, miniature microswitches (380 series)
 41.3 × 41.3 × 51.2, subminiature microswitches (290 series)

Actuator ■ knob

Approvals ENEC, UL and CSA (switch only)



Popular products

Ordering Reference	Panel cut-out	Dimensions	Directional gating	Number of poles	Switch type	Terminal Type	Electrical rating ENEC	UL/CSA
S 721001	Ø 22 × 20	41.3 × 41.3 × 81.2	2 way gate at 180°	1 pole	292/20/150	Solder	6 A, 250 VAC, 25E3, T85	6 A, 250 VAC
S 741001	Ø 22 × 20	41.3 × 41.3 × 81.2	4 way gate at 90°	1 pole	292/20/150	Solder	6 A, 250 VAC, 25E3, T85	6 A, 250 VAC
S 722001	Ø 22 × 20	41.3 × 41.3 × 81.2	2 way gate at 180°	2 pole	292/20/150	Solder	6 A, 250 VAC, 25E3, T85	6 A, 250 VAC
S 742001	Ø 22 × 20	41.3 × 41.3 × 81.2	4 way gate at 90°	2 pole	292/20/150	Solder	6 A, 250 VAC, 25E3, T85	6 A, 250 VAC
D 721001	Ø 22 × 20	55 × 55 × 88.2	2 way gate at 180°	1 pole	382/25/10	Solder	15 (4) A, 250 VAC, 10E3, T85	15 A, ½HP, 125/250 VAC
D 741001	Ø 22 × 20	55 × 55 × 88.2	4 way gate at 90°	1 pole	382/25/10	Solder	15 (4) A, 250 VAC, 10E3, T85	15 A, ½HP, 125/250 VAC
D 722001	Ø 22 × 20	55 × 55 × 88.2	2 way gate at 180°	2 pole	382/25/10	Solder	15 (4) A, 250 VAC, 10E3, T85	15 A, ½HP, 125/250 VAC
D 742001	Ø 22 × 20	55 × 55 × 88.2	4 way gate at 90°	2 pole	382/25/10	Solder	15 (4) A, 250 VAC, 10E3, T85	15 A, ½HP, 125/250 VAC

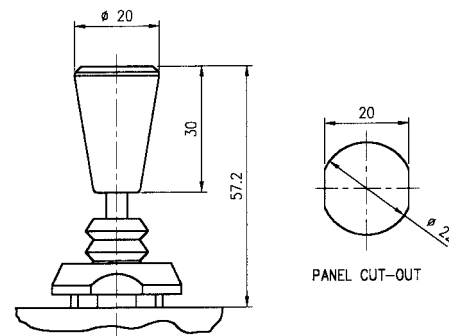
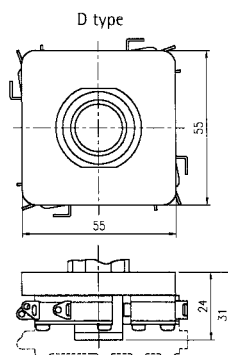
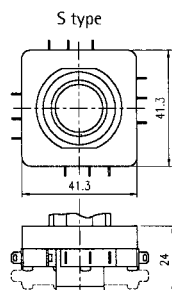
Specifications

Switch	380 series miniature snap-action microswitches (D type below) or 290 series subminiature snap-action microswitches (S type below)
Body and fixing nut	Nylon 6.6
Spindle	Nylon 6.6 reinforced with stainless steel
Sealing cowl	Neoprene
Knob	Phenolic
Spring	Spring steel

Dimensions

Dimensions below panel

Dimensions above panel



Recommended maximum electrical ratings

Approvals held	None
Electrical rating	D – 15 A, 250 VAC S – 6 A, 250 VAC
Switch Type	D – 382/25/10 (solder) or 383/25/10 (faston) with gold flashed contacts S – 292/20/150 (solder) or 291/20/150 (faston) with gold flashed contacts
Temperature rating	T85 °C
Insulation resistance	>1250 V
Tracking resistance	PTI KB 250

Ordering Reference

Switch	S	290 Series subminiature microswitches	Example: S	7	1	1	0	0	1
	D	380 Series miniature microswitches							
Type	7	700 range							
Directional gating	1	Ungated (stirring action)							
	2	2 way gate							
	4	4 way gate							
Number of poles	1	Single pole							
	2	Double pole							
Spring return	0	Standard (momentary)							
Terminal Type		S Type (290)							
	0	292 (solder)							
	1	291 (2.8 × 0.5 faston)							
	2	294 – PCB – LH faston							
		D Type (380)							
		382 (solder)							
		383 (6.35 × 0.8 faston)							
		385 (4.8 × 0.5 mm faston)							
Cowl fitted	1	Standard							

J8

Panel cut-out (mm) Ø 22.5

Characteristics ■ choice of directional gating options
■ choice of microswitch functions

Rating up to 16 A, 250 VAC
up to 5 A, 250 VAC

Dimensions (mm) up to 74.5 × 74.5 × 105
up to Ø 60 × 60 × 103.5

Actuator ■ knob

Approvals ENEC, UL and CSA (switch only)



Popular products

Ordering Reference	Panel cut-out	Dimensions	Directional gating	Number of poles	Actuating modus	Switch type	Terminal Type	Electrical rating ENEC	UL/CSA
J84 111 113	Ø 22.5	74.5 × 74.4 × 94.7	4 way gate at 90°	1 pole	Normal	XG03-88	Solder	16 (6) A, 250 VAC, 5E4, T85	15 A, 250 VAC
J82 111 113	Ø 22.5	74.5 × 74.4 × 94.7	2 way gate at 180°	1 pole	Normal	XG03-88	Solder	16 (6) A, 250 VAC, 5E4, T85	15 A, 250 VAC
J84 112 113	Ø 22.5	74.5 × 74.4 × 94.7	4 way gate at 90°	1 pole	Lift to operate	XG03-88	Solder	16 (6) A, 250 VAC, 5E4, T85	15 A, 250 VAC
J82 112 113	Ø 22.5	74.5 × 74.4 × 94.7	2 way gate at 180°	1 pole	Lift to operate	XG03-88	Solder	16 (6) A, 250 VAC, 5E4, T85	15 A, 250 VAC
J82 211 113	Ø 22.5	74.5 × 74.4 × 105	2 way gate at 180°	2 pole	Normal	XG03-88	Solder	16 (6) A, 250 VAC, 5E4, T85	15 A, 250 VAC
J84 211 113	Ø 22.5	74.5 × 74.4 × 105	4 way gate at 90°	2 pole	Normal	XG03-88	Solder	16 (6) A, 250 VAC, 5E4, T85	15 A, 250 VAC

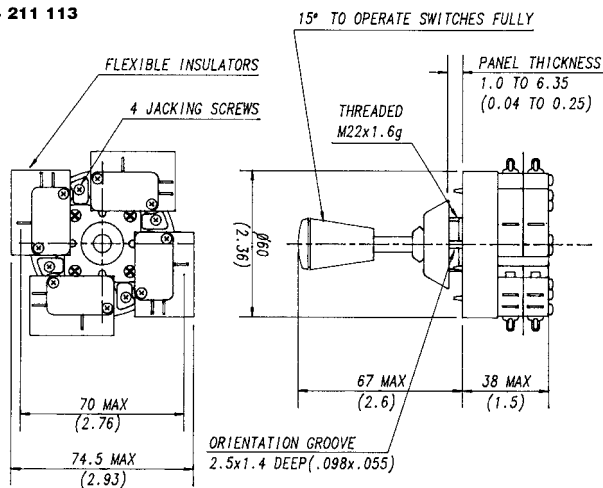
Specifications

Top plate	Glass fibre reinforced polyamide (PA. 6.6)
Control rod	Steel chrome plated
Bezel/knob	Phenolic
Cowl/'O' ring	Silicon rubber
Temperature range	-40°C to +85°C
Mechanical life	5 × 10 ⁵ cycles minimum
Type of protection	Cowl and 'O' ring provide front of panel sealing. For details of insert switch protection refer to the appropriate section
Mounting	via single hole 22.5 mm (0.89 in) dia
Insert switches	V4NCT7 – Sub-miniature XG03-88 – Miniature (Other types may be possible please consult TH-Contact Electronics)

Dimensions

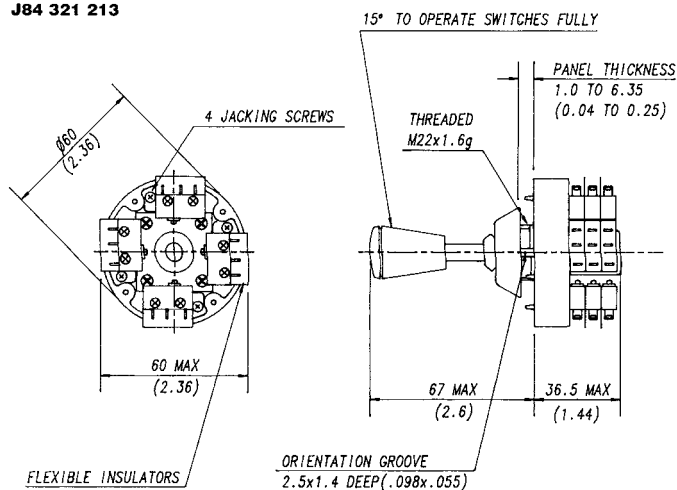
Dimensions below panel

J84 211 113



Dimensions above panel

J84 321 213



Recommended maximum electrical ratings

	Voltage	Voltage (V)	Resistive load (A)	Inductive load (A)	
V4NCT7	AC	up to 250	5	2	See pages 52 to 55
	DC	up to 30	5	3	
	DC	up to 50	1	1	
	DC	up to 75	0.75	0.75	
XG03-88	AC	up to 250	16	6	See pages 70 to 73
	DC	up 30	12	7	
	DC	up to 50	3	1.5	
	DC	up to 75	1	0.6	
	DC	up to 125	0.5	0.3	
	DC	up to 250	0.3	0.2	

Ordering Reference

Basic type J8		Example: J8 0 1 1 1 113				
Number of gates	0	Ungated (stirring action)				
	2					
	4					
Number of switches mounted per gate	1	1 × V4NCT7 or 2 × XG03-88				
	2					
	3					
Type of action	1	Momentary				
	2					
	4					
Mode of operation	1	Normal (Direct push)				
	2					
Type of micro switches fitted	113	XG03-88				
	213					

Contact blocks

TH593566020	NO	2.8 × 0.5mm	Contact blocks for TP2, TK2, TR2	gold plated
TH593560020	NO	Insulated faston		
TH593561020	NO	Solder		
TH593566050	NC	2.8 × 0.5mm		
TH593560050	NC	Insulated faston		
TH593561050	NC	Solder		
TH593566000	1 NO + 1 NC	2.8 × 0.5mm		
TH593560000	1 NO + 1 NC	Insulated faston		
TH593561000	1 NO + 1 NC	Solder		
TH593569000	2 NO + 2 NC	2.8 × 0.5mm		
TH593563000	2 NO + 2 NC	Insulated faston		
TH593564000	2 NO + 2 NC	Solder		

TH493500000 Contact blocks for TP4, TP5 gold plated

TH493520000 End plate for TP4, TP5

TH493521000 (for 1 contact block)

TH493522000 (for 2 contact blocks)

TH493523000 (for 3 contact blocks)

Pairs of screws for TP4, TP5

Mounting nuts (whole range)

TH593545000 Fixation nuts M16 × 1 (TP2, TP5, TP4)

TH593547000 Fixation nuts M22 × 1 flat (TP2, TP5, TP4)

TH493547000 Fixation nuts M22 × 1 large (TP5, TP4)

Countersunk mounting bezel sets (TP2, TP5, TI2, TI5)

For concealed versions only

TH593072000 for Switches 18 × 24 mm, IP40

TH593082000 for Switches 18 × 24 mm, IP67

TH593073000 for Switches 18 × 18 mm, IP40

TH593083000 for Switches 18 × 18 mm, IP67

Panel plugs (TP2, TP5)

TH493000000 18 × 24, IP40

TH493002000 18 × 18, IP40

TH493004000 Ø 18, IP40

Protecting covers (TP2, TP5, TP4)

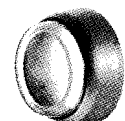
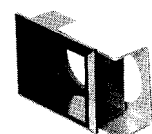
TH493033000 Sealing ring D26, alu natural, silicon cap. IP65 (TP5, TP2, TI5, TI2 22.5 mm)

TH493033001 Sealing ring D25, alu natural, strong pebax cap. IP65 (TP5, TP2, TI5, TI2 22.5 mm)

TH493031000 Splashproof protection (transp. plast. upper part only) for exposed bezel 18 × 24 (TP2, TP5, TP4)

TH493010000 Guard bracket, for switches 18 × 24, anodised aluminum (wide sides raised)

TH493011000 Guard bracket, for switches 18 × 18, anodised aluminum (two sides raised)



TH493012000 Guard bracket, for switches $\varnothing$ 18, anodised aluminum



TH493020000 Guard bracket, for switches 18 × 24, black plastic (all sides raised)



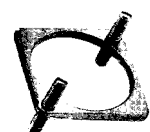
TH593032000 Protecting cover with transparent plastic lid, 18 × 18

TH593035000 Protecting cover with transparent plastic lid, 18 × 24



Anti-rotation devices (TK2, TR2, TE8)

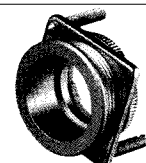
TH053205000 for panel cut-out 16.2 mm (TK2, TR2)



TH493532000 for panel cut-out 22.5 mm (TK2, TR2)



TH593080000 Adapter set, key- and rotary switches (TK2, TR2)



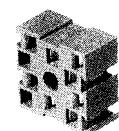
TH060661000 panel cut-out 16.2 mm (TE8)



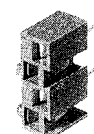
Plug in socket (TP2)

TH593578000 for 1 contact block TP2 with indicator terminals

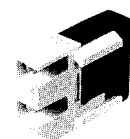
TH593568000 for 2 contact blocks TP2 with indicator terminals



TH593582000 for 1 contact block TP2 without indicator terminals



TH593584000 Diode carrier with 2 diodes 1N4007, faston connection without insulation

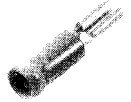


Extra and spare keys (TK2)

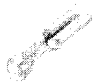
TH493049001 to TH493049020 (KABA MICRO, EB0001 – EB0020)

Faston Connectors (TP2, TK2, TR2, TP8)

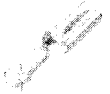
TH593571000 Faston pin, 2.8 × 0.5 mm, insulated, for wires 0.8 – 1.4 mm² (TP2, TK2, TR2)



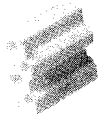
TH593572000 Faston pin, 2.8 × 0.5 mm, for wires 0.5 – 1.0 mm² (TP2, TK2, TR2, TP8)



TH593573000 Faston pin, 2.8 × 0.5 mm, for faston casings, for wires 0.3 – 0.6 mm² (TP2, TK2, TR2)



TH593574000 Sleeve and casing for th25 contact block 1 NO + 1 NC (TP2, TK2, TR2)



TH593575000 Sleeve and casing for th25 lamp terminals (TP2, TK2, TR2)

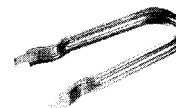


Miscellaneous (Lamp extractor, metal and plastic spanners)

TH492000000 Lamp extractor



TH492005000 Lens extractor



TH492100000 Metal box-spanner, fixation nut M16 × 1

TH492105000 Metal box-spanner, fixation nut M22 × 1



Lamps (TP2, TP5, TI2, TI5)

Incandescent lamps

TH590000000 6 V

TH590001000 12 V

TH590006000 24 V

TH590004000 48 V

Midget – grooved Led

TH590231000 Yellow 6 V

TH590234000 Yellow 12 V

TH590237000 Yellow 24V

TH590240000 Yellow 48 V

TH590232000 Green 6 V

TH590235000 Green 12 V

TH590238000 Green 24 V

TH590241000 Green 48 V

TH590230000 Red 6 V

TH590233000 Red 12 V

TH590236000 Red 24 V

TH590239000 Red 48 V

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	TP5	TP51LAA2A4CN TP51LDA2D4CN TP51MAA2A4CN	TP51MDA2D4CN TP52LFD2F4CN TP52MFD2F4CN	27
	TP4	TP41LAJ2A4NXX TP41LEJ2E4NXX TP41MAJ2A4NXX	TP41MEJ2E4NXX TP42LHJ2H4NXX TP42MHJ2H4NXX	33
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	TI5	TI51VALA4CN	TI52VFSF4CN	64
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	P5	P53FBA201		86
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