



saia-burgess

 JOHNSON
ELECTRIC



ROHS konforme Produkte



Switch Products
Microswitches
Manually operated
Panel Mounted
Joystick

saia-burgess

Smart solutions for comfort and safety

Saia-Burgess Group

The human requirement for comfort and safety is central in driving technological progress.

Our activities are inspired by this:

Smart solutions for comfort and safety.

Profile

Who

We are a successful international group focussing on expanding segments of the automotive, industrial and building automation markets. As a supplier, our core competency is the development of innovative solutions which integrate electronic and electromechanical technologies.

What

We want to be a leading supplier in our target market segments. Our global brand stands for innovation, reliability and value. Respecting ethical principles, we create sustained added value for all of our interest groups – employees, customers, shareholders.

How

Together with our customers we develop solutions which increase comfort, safety and economy. We manufacture switches, sensors, motors, solenoids, electronic controllers and subsystems in Europe, America and Asia. Our products are supplied and supported through our extensive international sales and tech-centre organisation.

Market led structure

Automotive Division

Supplies mechanical and electromechanical components in large volumes worldwide (switches, motors, solenoids, sensors) together with subsystems as innovative solutions for clearly defined applications in the comfort and safety areas of automotive design.

Industry Division

Supplies OEM customers worldwide with a broad product range comprising electromechanical and electronic components and subsystems. These cover increased demands for comfort and safety features, mainly in domestic appliances, heating, ventilation and air-conditioning applications, and in the general industrial sector.

Controls Division

Supplies customers in Europe with control technology based on programmable logic controllers for use mainly in the areas of infrastructure automation processing control.

Innovative Products

Our research and development is focused totally on market need and customer requirements. Substantial investment is made in the development not only of innovative, new products, but also of customised solutions. Our products are manufactured, according to type and technical requirements, on either highly automated, partially automated or manual production equipment. Supplies customers in Europe with control technology based on programmable logic controllers for use mainly in the areas of infrastructure automation processing control.

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Saia-Burgess Group

International





Saia-Burgess is active in the development and manufacture of Switches, Motors, Solenoids, Control Components as well as related sub-systems.

Switches

Snap-action Microswitches

Ultraminiature



Type	F4	F5	F1	F1N
Characteristics	<ul style="list-style-type: none"> small size long mechanical and electrical life solder 2 mm faston PCB terminals 	<ul style="list-style-type: none"> small switch long mechanical and electrical life PCB mounting 	<ul style="list-style-type: none"> small size high current long mechanical life PCB mounting 	<ul style="list-style-type: none"> small size low current long mechanical life PCB mounting sealed IP54 (option)
Rating	250 VAC, 5 A	250 VAC, 5 A	250 VAC, 5 A	up to 250 VAC, 1 A
Dimensions (mm)	12.8 × 10 × 5	12.8 × 7 × 5	16 × 6 × 6.5	16 × 6.5 × 6
Actuator	<ul style="list-style-type: none"> plunger plain lever simulated roller lever/cam follower 	<ul style="list-style-type: none"> plunger plain lever simulated roller lever/cam follower 	<ul style="list-style-type: none"> plunger plain lever simulated roller lever/cam follower 	<ul style="list-style-type: none"> plunger plain lever simulated roller lever/cam follower
Approvals	UL, CSA	UL, CSA	UL, CSA	none
Page	18	21	24	27

Snap-action Microswitches



Type	X5	F6	FK4	M0
Characteristics	<ul style="list-style-type: none"> small size low current PCB mounting 	<ul style="list-style-type: none"> small size sealed (IP6K7) PCB mounting 	<ul style="list-style-type: none"> double break switching long mechanical and electrical life solder, 2 mm faston and PCB mounting snap-action 	<ul style="list-style-type: none"> mid-off function sealed (IP6K7) spring return to centre toggle action long overtravel
Rating	250 VAC, 1.5 A	12–30 VDC, 5–300 mA	250 VAC, 5 A	12 VDC, 100 mA
Dimensions (mm)	13 × 6.5 × 6	14.7 × 9 × 5.4	18 × 8 × 5	13 × 25.5 × 5.5
Actuator	<ul style="list-style-type: none"> plunger plain lever 	<ul style="list-style-type: none"> plunger plain lever 	<ul style="list-style-type: none"> plunger plain lever simulated roller lever/cam follower 	<ul style="list-style-type: none"> toggle
Approvals	UL, CSA	none	UL, CSA	none
Page	30	33	36	39

Snap-action Microswitches

Subminiature



Type	XC	X4	V4NC	V4N	V4L
Characteristics	<ul style="list-style-type: none"> wide range of forces and variants long mechanical and electrical life solder, PCB and faston terminals 	<ul style="list-style-type: none"> thermoplastic housing long mechanical and electrical life solder, PCB and faston terminals 	<ul style="list-style-type: none"> wide variety of levers peg mounting option pre-wired option sealed (IP6K7) solder and faston terminals PCB terminals 	<ul style="list-style-type: none"> sealed (IP67) solder 2.8 mm faston and PCB terminals pre-wired option 	<ul style="list-style-type: none"> long overtravel of 2.2 mm minimum sealed to (IP6K7) option pre-wired option solder terminals
Rating	250 VAC, 10 A max.	250 VAC, 12 A max.	250 VAC, 5 A	250 VAC, 5 A	250 VAC, 5 A
Dimensions (mm)	19.9 × 9.5 × 6.4	19.9 × 9.7 × 6.4	20 × 10.3 × 6.4	20 × 10.3 × 6.4	20 × 11 × 6.4
Actuator	<ul style="list-style-type: none"> plunger mushroom plunger plain levers simulated roller lever/cam follower roller levers 	<ul style="list-style-type: none"> plunger plain levers cam follower lever roller levers 	<ul style="list-style-type: none"> plunger plain levers roller levers simulated roller levers 	<ul style="list-style-type: none"> plunger plain levers roller levers simulated roller lever/cam follower 	<ul style="list-style-type: none"> plunger plain lever ice break lever
Approvals	ENEC, UL, cUL, CSA	UL, cUL, CSA, ENEC, CQC	none	UL, CSA, ENEC	ENEC, UL, CSA
Page	44	48	52	56	60

Snap-action Microswitches

Miniature



Type	XG	390	X3	G3	340
Characteristics	<ul style="list-style-type: none"> wide range of forces and ratings long mechanical and electrical life solder, faston and PCB terminals 	<ul style="list-style-type: none"> wiping contacts, leaf spring mechanism rust 5 terminal option 	<ul style="list-style-type: none"> 8 mm creepage and clearance distance to the actuator long mechanical and electrical life solder, faston and PCB terminals 	<ul style="list-style-type: none"> low operating force, high current capacity < 15 cn operating force option > 3 mm contact gap, change-over mechanism option 	<ul style="list-style-type: none"> wiping contacts, leaf spring mechanism 3 mm contact gap option
Rating	250 VAC, 26 A max.	250 VAC, 25 A max.	250 VAC, 21 A max.	up to 250 VAC, 18 A	250 VAC, 16 A max.
Dimensions (mm)	27.8 × 15.9 × 10.3	28.8 × 15.9 × 10.1	27.8 × 15.9 × 10.3	28 × 15.9 × 10	28.8 × 15.9 × 10.1
Actuator	<ul style="list-style-type: none"> plunger plain levers roller levers simulated roller levers 	<ul style="list-style-type: none"> plunger plain levers roller levers moulded lever 	<ul style="list-style-type: none"> plunger straight lever simulated roller levers roller levers 	<ul style="list-style-type: none"> plunger ramp plunger 	<ul style="list-style-type: none"> plunger roller lever plain levers simulated roller lever moulded lever
Approvals	ENEC, UL, cUL, CSA	ENEC, UL, CSA	UL, cUL, CSA, ENEC, CQC	ENEC, UL, CSA	ENEC
Page	66	70	74	78	81

Snap-action Microswitches

Torque



Type **600**

- Characteristics
- low and medium torque operation
 - horizontal or vertical actuation
 - 6.35 × 0.8 faston terminals

Rating 250 VAC, 5 A

Dimensions (mm) 39.6 × 22 × 16.4

Actuator ■ wire levers

Approvals none

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Push Button Snap-action

Momentary



Type **QA4/PBA4**



V3Q



C0911

Latching



ZB5

Panel cut-out (mm) Ø 6.1

Ø 12.7

Ø 12.7

Ø 12.7

- Characteristics
- for use with V4N/V4NC series
 - long overtravel up to 5 mm
 - simple clip-on attachment
 - round or square bezels
 - push button options

- long overtravel assemblies with single or double pole options
- IP67, pre-wired option

- single pole
- change-over
- momentary function

- single pole
- change-over
- latching function

Rating 250 VAC, 5 A

up to 250 VAC, 10 A

250 VAC, 15 A

250 VAC, 15 A

Dimensions (mm) 20 × 6.45 × 38.3

36.5 × 33.6 × 17.3
single pole
36.5 × 33.6 × 26.2
double pole

43 × 15

43 × 15

Actuator ■ stainless steel plunger
■ polyamide (PA 6.6) plunger

■ plunger
■ roller plunger

■ round button
■ rectangular button
■ 4 colour options

■ round button
■ rectangular button
■ 4 colour options

Approvals UL, CSA

UL, CSA

ENEC, UL, CSA

ENEC, UL, CSA

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Snap-action Microswitches

Standard



Plastic housed



Type	PN4	3BR	K5	V3S
Characteristics	<ul style="list-style-type: none"> precision switching long mechanical life screw terminals 	<ul style="list-style-type: none"> choice of IP54 or IP67 sealed versions precise movements and exceptional repeat accuracy flying lead version available long overtravel 	<ul style="list-style-type: none"> double break switching long mechanical life high electrical rating faston terminals 	<ul style="list-style-type: none"> sealed (IP67) flying leads robust construction
Rating	250 VAC, 15 A	250 VAC, 10 A max.	250 VAC, 16 A	250 VAC, 5 A
Dimensions (mm)	49 × 22 × 17.5	53.1 × 20.6 × 30.8	41 × 19 × 15.5	32 × 24 × 10
Actuator	<ul style="list-style-type: none"> plunger plain lever roller lever 	<ul style="list-style-type: none"> plunger 	<ul style="list-style-type: none"> plunger ramp plunger plain lever roller lever 	<ul style="list-style-type: none"> plunger plain levers roller levers
Approvals	UL, CSA	UL, CSA	UL, CSA	UL, CSA, ENEC
Page	102	106	109	114

Snap-action

Metal housed



Type	V9N	4BR	4CR	M9 / C9	M2V3 / C2V3
Characteristics	<ul style="list-style-type: none"> sealed (IP67) metal housed screw terminals or flying leads 	<ul style="list-style-type: none"> choice of IP54 or IP67 sealed versions precise movements and exceptional repeat accuracy robust metal housing flying lead version available long overtravel 	<ul style="list-style-type: none"> precise movements and exceptional repeat accuracy robust metal housing screw terminals single hole mounting long overtravel 	<ul style="list-style-type: none"> sealed (IP67) internal earth (ground) screw provided trident spring mechanism for precise movements hazardous area option (ATEX) 	<ul style="list-style-type: none"> sealed (IP65) contains two electrically independent change-over switches rotary action levers can be mounted in four different positions and then adjusted through 360°
Rating	250 VAC, 10 A max.	250 VAC, 15 A max.	250 VAC, 15 A max.	250 VAC, 15 A max.	250 VAC, 10 A max.
Dimensions (mm)	42 × 24.5 × 16	53.1 × 20.6 × 29.2	53.1 × 20.6 × 30.8	76.7 × 45.8 × 26	66.9 × 38.3 × 30.2
Actuator	<ul style="list-style-type: none"> plunger plain levers reverse action levers roller levers 	<ul style="list-style-type: none"> plunger 	<ul style="list-style-type: none"> spring plunger spring plunger with in-line roller 	<ul style="list-style-type: none"> spring plunger adjustable roller lever wobble stick 	<ul style="list-style-type: none"> spring plunger roller levers rod lever wobble stick
Approvals	UL, CSA	UL, CSA	UL, CSA	UL, CSA, ATEX	UL, CSA
Page	117	121	124	127	130

Door Interlock

	Forced break		Snap-action		Positive-action
Type	XP	XT	DS	TPS	KB5EQ
Characteristics	<ul style="list-style-type: none"> double break switching positive-action force break option > 3 mm contact gap at full travel option faston terminals 	<ul style="list-style-type: none"> 8 mm contact gap, creepage and clearance distances double break contacts 	<ul style="list-style-type: none"> enclosed snap-action switching long overtravel tapped plunger screw terminals 	<ul style="list-style-type: none"> snap-action switching enclosed design long overtravel adjustable operating position screw terminals 	<ul style="list-style-type: none"> positive-action forced double break switching > 3 mm contact gap enclosed design long overtravel screw terminals
Rating	400 VAC, 16 A	400 VAC, 16.5 A max.	250 VAC, 15 A	250 VAC, 15 A	250 VAC, 25 A
Dimensions (mm)	30 × 32 × 12	30 × 32 × 12	48 × 51 × 16	54 × 50 × 18	54 × 50 × 17.5
Actuator	<ul style="list-style-type: none"> plain plunger mushroom plunger plunger with external spring (for increased reset security) 	<ul style="list-style-type: none"> shrouded plunger optional key plain plunger 	<ul style="list-style-type: none"> plain spindle plunger 	<ul style="list-style-type: none"> plain spindle plunger 	<ul style="list-style-type: none"> plunger plunger roller
Approvals	ENEC, UL, CSA	UL, cUL, CSA, ENEC	UL, CSA	UL, CSA	UL, CSA
Page	136	139	142	145	148

Positive-action

	Miniature	Standard	Metal housed
Type	BVM3	KB5	V9B
Characteristics	<ul style="list-style-type: none"> positive-action (forced break) contacts > 3 mm contact gap at full travel internationally recognized V3 housing faston terminals 	<ul style="list-style-type: none"> positive-action forced double break switching > 3 mm contact gap at full travel high electrical rating faston terminals 	<ul style="list-style-type: none"> positive-action (forced break) contacts > 3 mm contact gap at full travel robust metal housing IEC (IP67) sealed mechanism high temperature unwired versions pre-wired options – vertical and horizontal leads
Rating	250 VAC, 10 A	up to 250 V, 25 A	250 VAC, 10 A max.
Dimensions (mm)	28 × 16 × 10.5	41 × 19.5 × 15.5	42.3 × 24.5 × 16
Actuator	<ul style="list-style-type: none"> plunger plain lever roller lever 	<ul style="list-style-type: none"> plunger plain lever roller levers 	<ul style="list-style-type: none"> plunger roller levers
Approvals	UL, CSA and ENEC	UL, CSA	UL, CSA
Page	152	155	158

Momentary Switches

Momentary



Snap-action



Type	1427	1430	1429	XKA
Characteristics	<ul style="list-style-type: none"> single pole faston snap-in mounting or centre-fixing 	<ul style="list-style-type: none"> single pole faston snap-in mounting 	<ul style="list-style-type: none"> single pole snap-action function faston snap-in mounting 	<ul style="list-style-type: none"> long overtravel snap-action C0 snap-in mounting type of protection according to IEC 60079-15:1987
Rating	250 VAC, 0.2 [0.2] A 1E5 250 VAC, 0.25 A	250 VAC, 0.2 [0.2] A 5E4	250 VAC, 0.2 [0.2] A 2E5	250 VAC, 1 (1) A 5E4, T85
Dimensions (mm)	various	various	various	28 × 20 × 15
Actuator	<ul style="list-style-type: none"> plunger 	<ul style="list-style-type: none"> lever 	<ul style="list-style-type: none"> plunger 	<ul style="list-style-type: none"> plain lever round levers
Approvals	ENEC, cUL	ENEC	ENEC	UL, CSA, ENEC
Page	168	171	174	177

Switches

Push Button



Type	3290	3292	3293	3200
Characteristics	<ul style="list-style-type: none"> single pole on/off faston PCB terminals customised mounting momentary or latching high temp. 125° 	<ul style="list-style-type: none"> single/double pole on/off faston PCB terminals extended life (5E4) customised mounting momentary or latching 	<ul style="list-style-type: none"> single/double pole on/off faston PCB terminals customised mounting momentary or latching 	<ul style="list-style-type: none"> illumination optional single pole change-over customised mounting momentary or latching PCB terminals
Rating	250 VAC, 8 (8) A 5E4 125 VAC, 12 A	250 VAC, 16 (4) A, 1E4, T100 250 VAC, 10 (10) A, 1E4, T100 250 VAC, 8 (8) A, 5E4, T125 125 VAC, 16 A, ¾ hp, T85	250 VAC, 8 (8) A, 1E4, T100 250 VAC, 10 (4) A, 1E4, T100	12 VDC, 2 A
Dimensions (mm)	13.5 × 19	13.5 × 19	13.5 × 19	12.5 × 12.5 × 19.5
Actuator	<ul style="list-style-type: none"> plunger square 6 mm 	<ul style="list-style-type: none"> plunger square 6 mm 	<ul style="list-style-type: none"> plunger square 6 mm 	<ul style="list-style-type: none"> square 10.4 mm
Approvals	ENEC, UL, CSA	ENEC, cUL, US	ENEC	none
Page	182	185	188	191

Switches

Rotary Switches



Type **4022**

Slide Switches



Type **3585**

Characteristics	<ul style="list-style-type: none"> ■ single pole with on/off or step function ■ double pole with on/off-function ■ solder, PCB, faston terminals ■ high temp. 100° 	<ul style="list-style-type: none"> ■ single pole ■ step function ■ PCB-terminals ■ customised mounting ■ high temp 85°
Rating	250 VAC, 12 (2) A 125 VAC, 10 A	250 VAC, 10 (2) A
Dimensions (mm)	30 × 14 × 15.3	39 × 20 × 15
Actuator	<ul style="list-style-type: none"> ■ cam ■ square access hole 3.25 mm² 	<ul style="list-style-type: none"> ■ slider
Approvals	ENEC, UL, CSA	ENEC
Page	193	195

Switches

Rocker



Type **3670**



Type **3672**



Type **3673**



Type **3680**



Type **3600**

Tippmatic®

Auto-Shut-Off

Characteristics	<ul style="list-style-type: none"> ■ single pole ■ on/off ■ illuminated/non-illum. ■ snap-in mounting ■ faston ■ optional with momentary function ■ temp. 100/55° 	<ul style="list-style-type: none"> ■ single pole ■ on/off ■ illuminated/non-illum. ■ snap-in mounting ■ solder terminals ■ PCB terminals ■ faston ■ momentary function ■ temp. 85/55° 	<ul style="list-style-type: none"> ■ single pole ■ change-over (with or without "zero-position") ■ snap-in mounting ■ faston ■ μ-gap ■ temp. 100/55° 	<ul style="list-style-type: none"> ■ single pole ■ on/off ■ illuminated/non-illum. ■ snap-in mounting ■ faston ■ optional with momentary function ■ temp. 85/55° 	<ul style="list-style-type: none"> ■ integral timer function ■ single pole ■ on/off ■ illuminated/non-illum. ■ snap-in mounting ■ temp. 100/55°
Rating	250 VAC, 6 (2) A 250 VAC, 12 (2) A 125 VAC, 12 A	250 VAC, 6 (2) A 125 VAC, 7.5 A	250 VAC, 6 (3) A 125 VAC, 10 A (for version with "zero"-position)	250 VAC, 6 (2) A 125 VAC, 7.5 A	250 VAC, 12 (4) A 125 VAC, 15 A
Dimensions (mm)	various	various	various	various	37.2 × 17 × ~38
Actuator	<ul style="list-style-type: none"> ■ rockers in different shapes/colours 	<ul style="list-style-type: none"> ■ rockers in different shapes/colours 	<ul style="list-style-type: none"> ■ rockers in different shapes/colours 	<ul style="list-style-type: none"> ■ rockers in different shapes/colours 	<ul style="list-style-type: none"> ■ standard rocker 25.4 x 10.7-mm
Approvals	ENEC, cUL	ENEC, UL	ENEC, cUL	ENEC, UL, CSA	ENEC, cUL
Page	198	202	206	209	212

Panel Mounted

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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> momentary or latching sealed IP40 or IP65 wide range of bezels shallow mounting depth with or without illumination NO, NC gold plated contact blocks 	<ul style="list-style-type: none"> mushroom momentary or latching sealed IP40 or IP65 wide range of bezels NO, NC gold plated contact blocks 	<ul style="list-style-type: none"> momentary sealed IP67 round metal bezels 1NO + 1 NC, 2 NC, 2 NO gold plated contact block 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> lenses in different shapes and colours 	<ul style="list-style-type: none"> lenses in different shapes and colours 	<ul style="list-style-type: none"> mushroom cap in different shapes and colours 	<ul style="list-style-type: none"> button and housing in different colours 	<ul style="list-style-type: none"> button and housing in different colours
Approvals	UL, CSA, VDE	UL, CSA, VDE	UL, CSA, VDE	none	none
Page	220	227	232	236	239

Panel Mounted

Push Button



Type	TP7	3300
Panel cut-out (mm)	Ø 16.2/22.5/30.3/43.3	Ø 44
Characteristics	<ul style="list-style-type: none"> piezo technology momentary sealed IP68 with or without illumination, two colours solid state output NO 	<ul style="list-style-type: none"> momentary function short travel 0.4 mm ca. sealed IP67 vandal resistant with or without illumination, two colours
Rating	3 to 35 VAC/VDC, 200 mA	12–24 VDC/30 mA
Dimensions (mm)	Ø 18 Ø 25 Ø 36 Ø 48	Ø 82
Actuator	<ul style="list-style-type: none"> housing in different colours 	<ul style="list-style-type: none"> anodised surface plated surface powder coated surface
Approvals	none	on request
Page	243	251

Panel Mounted

Indicators



Emergency Stop



Type	TI2	TI5	TI9	TE8
Panel cut-out (mm)	Ø 16.2/22.5	Ø 16.2/22.5	Ø 22.5	Ø 16.2/22.5
Characteristics	<ul style="list-style-type: none"> illuminated sealed IP40, IP65 or IP67 wide range of bezels midget grooved lamp/LED 	<ul style="list-style-type: none"> illuminated sealed IP40 or IP65 wide range of bezels midget grooved lamp/LED 	<ul style="list-style-type: none"> illuminated sealed IP67 round metal bezels red LED green LED red-green LED 	<ul style="list-style-type: none"> 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	max. 60 VAC/VDC	max. 60 VAC/VDC	24 VDC, 20 mA	250 VAC, 6 A
Dimensions (mm)	18 × 24 18 × 18 Ø 18 Ø 25	18 × 24 18 × 18 Ø 18 Ø 25	Ø 25	Ø 27 Ø 40
Actuator	<ul style="list-style-type: none"> lenses in different shapes and colours 	<ul style="list-style-type: none"> lenses in different shapes and colours 	<ul style="list-style-type: none"> aluminium housing in different colours 	<ul style="list-style-type: none"> red mushroom cap (Ø 27 mm only) reset by KABA key (Ø 40 mm only)
Approvals	UL, CSA, VDE	UL, CSA, VDE	none	IEC 947-5-1/947-5-5 (Ø 27 mm only)
Page	252	257	261	264

Panel Mounted

Keyswitch



Rotary



Type	TK2	TR2
Panel cut-out (mm)	Ø 16.2/22.5	Ø 16.2/22.5
Characteristics	<ul style="list-style-type: none"> 2 and 3 position sealed IP40 or IP65 plastic or aluminium bezels wide range of bezels NO, NC gold plated, single or double pole, contact blocks key trapping options 	<ul style="list-style-type: none"> 2 and 3 position sealed IP40 or IP65 plastic or aluminium bezels NO, NC gold plated, single or double pole, contact blocks
Rating	250 VAC, 5 A	250 VAC, 5 A
Dimensions (mm)	18 × 24 18 × 18 Ø 18 Ø 25	18 × 24 18 × 18 Ø 18 Ø 25
Actuator	<ul style="list-style-type: none"> key-KABA MICRO 	<ul style="list-style-type: none"> black knob, with white indicating bar
Approvals	UL, CSA, VDE	UL, CSA, VDE
Page	268	274

Panel Mounted

Keystwitches



Type	E1	M1	K2	P2	P5
Panel cut-out (mm)	∅ 15.1 × 15.1	∅ 15.1 × 15.1	∅ 19.1	∅ 19.1	∅ 20.6
Characteristics	<ul style="list-style-type: none"> tamper proof 2 positions key trapping options gold-plated contacts PCB terminals 	<ul style="list-style-type: none"> double pole change-over or three circuit selector switching functions key trapping option two body style options gold-plated contacts PCB terminals 	<ul style="list-style-type: none"> choice of off-on or change-over centre off or spring return options key trapping option solder terminals 	<ul style="list-style-type: none"> up to 12 contact pairs 2 security options with key actuation from 2 to 4 switch positions key trapping option solder terminals 	<ul style="list-style-type: none"> high electrical rating key trapping option choice of off-on, change-over with spring return or change-over with separate circuits
Rating	250 VAC, 100 mA	250 VAC, 100 mA	up to 250 VAC, 2 A	250 VAC, 2 A	up to 125 VAC, 10 A up to 250 VAC, 5 A
Dimensions (mm)	18 × 16	18 × 16 body style A 18 × 18 body style E	∅ 22	∅ 22	∅ 38.1 × 45.7 off-on ∅ 38.1 × 58.4 change-over
Actuator	plastic key	key (common or differs)	key (common or differs)	key (common or differs)	key (common or differs)
Approvals	none	none	UL and CSA	UL (optional)	UL and CSA
Page	280	283	286	289	292

Joystick

Microswitches



Microswitch/Potentiometer



Type	700	J8	H70	C700
Panel cut-out (mm)	∅ 22 × 20	∅ 22.5	∅ 36.8 × 22.2	∅ 12 × 40
Characteristics	<ul style="list-style-type: none"> single or double pole choice of directional gating options miniature or subminiature microswitch types 	<ul style="list-style-type: none"> choice of directional gating options choice of microswitch functions 	<ul style="list-style-type: none"> single axis joystick controllers positive movement to full travel – central dead band single or double pole versions 	<ul style="list-style-type: none"> choice of directional gating options to IP66 and IP67 choice of potentiometer, microswitch and switched knob 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	250 VAC, 6 A	Snap-action Microswitches up to 2 A, 250 VAC up to 1 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 ∅ 60 × 60 × 103.5	60 × 31.9 × 57.1	up to 58 × 58 × 93
Actuator	knob	knob	paddle style	knob
Approvals	ENEC, UL and CSA (switch only)	ENEC, UL and CSA (switch only)	ENEC, UL and CSA (switch only)	ENEC, UL and CSA (switch only)
Page	298	301	304	307





Switches

Snap-action Microswitches	Type	Preferred Products	Page
Ultraminiature	F4	F4T7UL F4T7GPUL F4T7Y1UL F4T7Y1GPUL F4T7YCUL F4T7YCGPUL	18
	F5	F5T8UL F5T8GPUL F5T8Y1UL F5T8Y1GPUL F5T8YCUL F5T8YCGPUL	21
	F1	F1T8GPUL F1T8Y1GPUL	24
	F1N	F1NST8 F1NST8A1 F1NST8AC	27
	X5	X5G303K1AN X5G303K1ANJ1	30
	F6	F6T85	33
Double break	FK4	FK4T7UL FK4T7Y1UL FK4T7YCUL FK4T8UL FK4T8Y1UL FK4T8YCUL	36
Mid off	M0	M0T11	39

F4

Snap-action Microswitches

Ultraminiature

F4

- Characteristics
- small size
 - long mechanical and electrical life
 - solder
 - 2 mm faston
 - PCB terminals

Rating 250 VAC, 5 A

Dimensions (mm) 12.8 × 10 × 5

- Actuator
- Plunger
 - plain lever
 - simulated roller lever/cam follower

Approvals UL, CSA



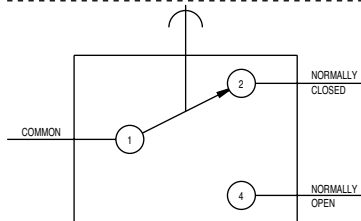
Preferred Range

Ordering Reference	Actuating Force (N) (ozf)		Sealing	Operating pos. (mm) (in)		Terminal	Circuit	Actuator	Contacts	Electrical rating
F4T7UL	1.4	5.00	IP40	8.1	0.32	Solder	CO	Plunger	Ag	Up to 250 VAC, 5 A
F4T7GPUL	1.4	5.00	IP40	8.1	0.32	Solder	CO	Plunger	Gold plate	Up to 250 VAC, 5 A
F4T7Y1UL	0.6	2.20	IP40	8.2	0.32	Solder	CO	Plain lever	Ag	Up to 250 VAC, 5 A
F4T7Y1GPUL	0.6	2.20	IP40	8.2	0.32	Solder	CO	Plain lever	Gold plate	Up to 250 VAC, 5 A
F4T7YCUL	0.7	2.50	IP40	10.3	0.41	Solder	CO	Simulated roller	Ag	Up to 250 VAC, 5 A
F4T7YCGPUL	0.7	2.50	IP40	10.3	0.41	Solder	CO	Simulated roller	Gold plate	Up to 250 VAC, 5 A

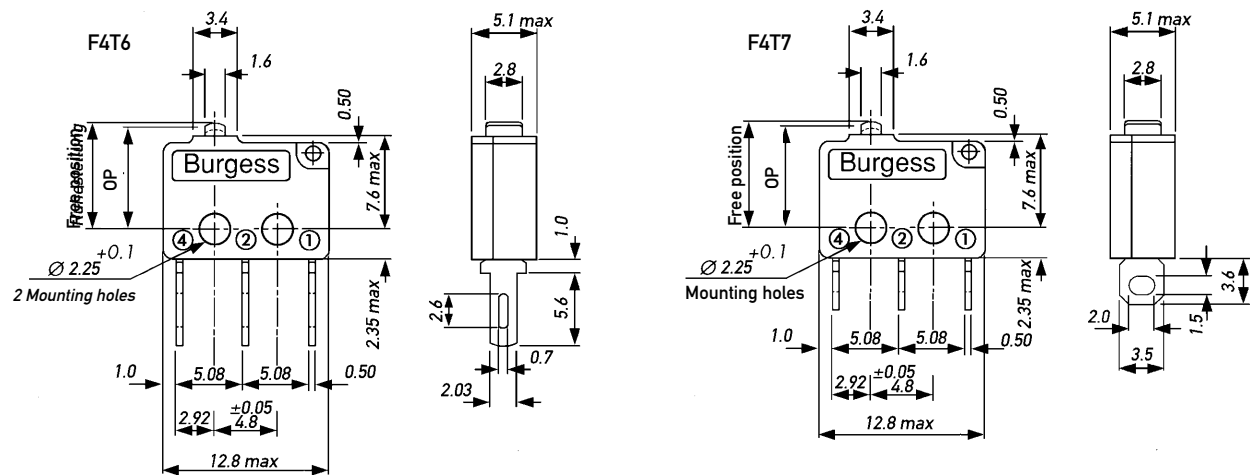
Specifications

Housing	Glass fibre reinforced nylon
Plunger	Nylon
Mechanism	Snap-action, single pole
Functions	Change-over, Normally open, Normally closed
Contacts	Fixed, Moving – Ag or Gold plate on Ag
Terminals	2.0 mm (0.08 in) faston and solder - brass, gold flashed
Temperature range °C	-40°C to +85°C
Mechanical life	10 ⁷ cycles minimum (impact free actuation)
Protection	IP 40 (enclosure)
Mounting	Side mounting
Actuators	Plain lever; simulated roller (cam follower) lever
Accessories	Lug mounting frame, insulating sheet, spring-leaf actuator

Circuit diagram



Dimensions

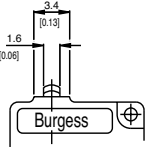
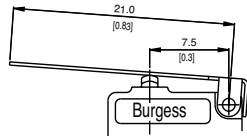
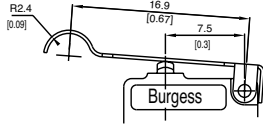


Recommended maximum electrical ratings

Voltage (max)	Load (A)	Approval
250 VAC	5 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations
125 VAC	5 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	5	General rating - 50,000 operations
15 - 30 VDC	3	General rating - 50,000 operations

F4

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential Maximum		Over travel		
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)			
Plunger	F4T6 F4T7	1.4	5.00	0.25	0.90	8.8	0.35	8.1	+0.3 -0.2	0.32	+0.01 -0.008	0.13	0.005	*
														
Y1-Lever	F4T6Y1 F4T7Y1	0.6	2.20	0.07	0.25	10.0	0.39	8.2	+1.0 -0.7	0.32	+0.04 -0.03	0.70	0.030	*
 <p>Width of lever 3.0 mm/0.12 in</p>														
YC-Lever	F4T6YC F4T7YC	0.7	2.50	0.09	0.32	11.7	0.46	10.3	+0.8 -0.55	0.41	+0.03 -0.02	0.45	0.020	*
 <p>Width of lever 3.0 mm/0.12 in</p>														

Operating characteristics are specified from the mounting holes.

* Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic type	F4	Example: F4 T6 C2 Y1 GP UL											
Terminals	T6	Faston	2.03 × 0.5 × 6.6 long										
	T7	Solder	3.50 × 0.5 × 3.6 long										
	T8	PCB	0.8 × 0.5 × 4.0 long										
Circuit	No symbol, change-over												
	C2	Normally closed											
	C4	Normally open											
Actuators	No symbol, without lever												
	Y1	Plain lever 21.0 mm											
	YC	Cam follower lever 16.9 mm											
Contacts Material	No symbol, Ag												
	GP	Gold plate on Ag (GP)											
Approvals	No symbol, without approval												
	UL	UL and CSA approval											
Special Features	/	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.											

F5

Snap-action Microswitches

Ultraminiature

F5

Characteristics	<ul style="list-style-type: none"> ■ small switch ■ long mechanical and electrical life ■ PCB mounting
Rating	250 VAC, 5 A
Dimensions (mm)	12.8 × 7 × 5
Actuator	<ul style="list-style-type: none"> ■ plunger ■ plain lever ■ simulated roller lever/cam follower
Approvals	UL, CSA



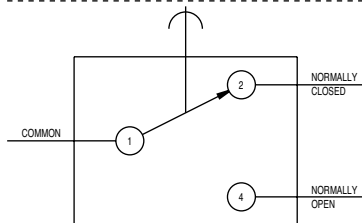
Preferred Range

Ordering Reference	Actuating Force (N) (ozf)		Sealing	Operating pos. (mm) (in)		Terminal	Circuit	Actuator	Contacts	Electrical rating
F5T8UL	1.4	5.00	IP40	8.75	0.34	PCB	C0	Plunger	Ag	Up to 250 VAC, 5 A
F5T8GPUL	1.4	5.00	IP40	8.75	0.34	PCB	C0	Plunger	Gold plate	Up to 250 VAC, 5 A
F5T8Y1UL	0.6	2.20	IP40	8.80	0.35	PCB	C0	Plain lever	Ag	Up to 250 VAC, 5 A
F5T8Y1GPUL	0.6	2.20	IP40	8.80	0.35	PCB	C0	Plain lever	Gold plate	Up to 250 VAC, 5 A
F5T8YCUL	0.7	2.50	IP40	10.90	0.43	PCB	C0	Simulated roller	Ag	Up to 250 VAC, 5 A
F5T8YCGPUL	0.7	2.50	IP40	10.90	0.43	PCB	C0	Simulated roller	Gold plate	Up to 250 VAC, 5 A

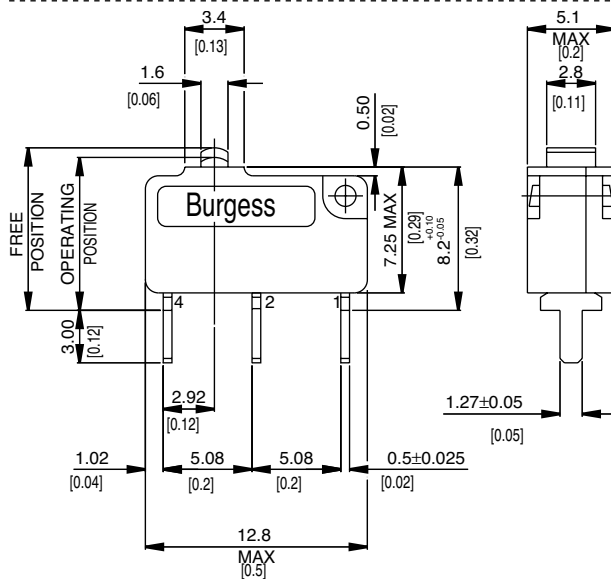
Specifications

Housing	Glass fibre reinforced nylon
Plunger	Nylon
Mechanism	Snap-action, single pole
Functions	Change-over, Normally open, Normally closed
Contacts	Fixed, Moving - Silver or Gold plate on silver
Terminals	PCB - Brass, gold flashed
Temperature range °C	-40°C to +85°C
Mechanical life	10 ⁷ cycles minimum (impact free actuation)
Protection	IP 40 (enclosure)
Mounting	PCB
Actuators	Plain lever; simulated roller (cam follower) lever

Circuit diagram



Dimensions



Recommended maximum electrical ratings

Voltage (max)	Load (A)	Approval
250 VAC	5 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations
125 VAC	5 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	5	General rating - 50,000 operations
15 - 30 VDC	1	General rating - 50,000 operations

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential Maximum		Over travel
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	
Plunger	F5T8	1.4	5.00	0.25	0.90	9.5	0.37	8.75 ± 0.3	0.34 ± 0.012	0.13	0.005	*
Y1-Lever	F5T8Y1	0.6	2.20	0.07	0.25	10.7	0.42	8.8 ± 1.1	0.35 ± 0.04	0.70	0.030	*
<p>Width of lever 3.0 mm/0.12 in</p>												
YC-Lever	F5T8YC	0.7	2.50	0.09	0.32	12.4	0.49	10.9 ± 0.85	0.43 ± 0.03	0.45	0.020	*
<p>Width of lever 3.0 mm/0.12 in</p>												

Operating characteristics are specified from the terminal shoulder.

* Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic type	F5	Example: F5 T8 C2 Y1 GP UL					
Terminals	T8	PCB	1.27 × 0.5 × 3.0 long				
Circuit	C2	No symbol, change-over Normally closed					
	C4	Normally open					
Actuators	Y1	No symbol, without lever Plain lever 21.0 mm					
	YC	Cam follower lever 16.9 mm					
Contact Material	GP	No symbol, Ag Gold plate on Ag (GP)					
	UL	No symbol, without approval UL and CSA approval					
Special Features	/	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.					

F1

Snap-action Microswitches

Ultraminiature

F1

- Characteristics
- small size
 - high current
 - long mechanical life
 - PCB mounting

Rating 250 VAC, 5 A

Dimensions (mm) 16 × 6 × 6.5

- Actuator
- plunger
 - plain lever
 - simulated roller lever/cam follower

Approvals UL, CSA



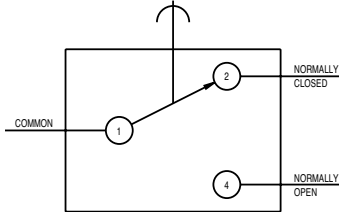
Preferred Range

Ordering Reference	Actuating Force (N) (ozf)		Sealing	Operating pos. (mm) (in)		Terminal	Circuit	Actuator	Contacts	Electrical rating
F1T8GPUL	1.4	5.00	IP40	6.35	0.25	PCB	CO	Plunger	Gold plate	Up to 250 VAC, 5 A
F1T8Y1GPUL	0.5	1.8	IP40	8.5	0.33	PCB	CO	Lever	Gold plate	Up to 250 VAC, 5 A

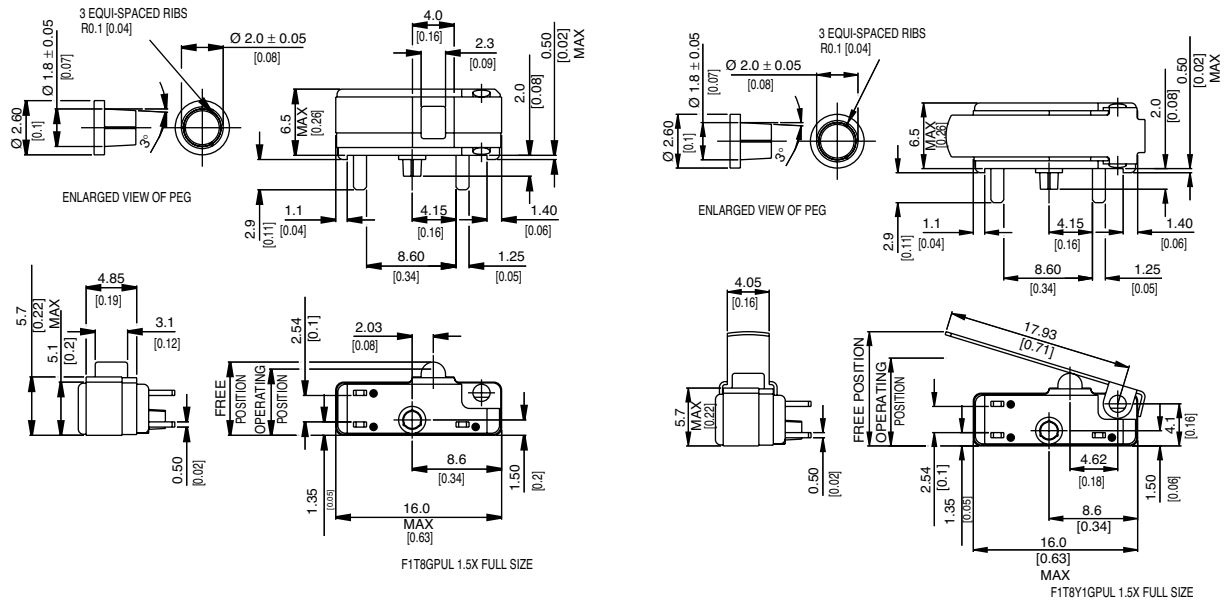
Specifications

Housing	Glass fibre reinforced nylon
Plunger	Nylon
Mechanism	Snap-action, coil spring mechanism with stainless steel spring
Functions	Single pole change-over
Contacts	Gold plate on silver
Terminals	PCB - copper, gold-flashed
Temperature range °C	-40°C to +85°C
Mechanical life	10 ⁶ cycles minimum (impact-free actuation)
Protection	IP40 (enclosure)
Mounting	Side mount PCB with locating pin on housing
Actuators	Plain plunger, straight lever

Circuit diagram



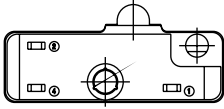
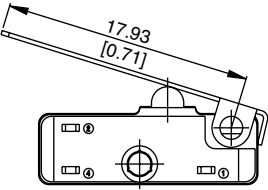
Dimensions



Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Approval
250 VAC	5 (0.75 pf)	5	UL 1054/CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	5		General rating - 50,000 operations
15 - 30 VDC	10	10	General rating - 50,000 operations


Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential Maximum		Over Travel	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Plunger	F1T8GPUL	1,4	5,00	0,28	1,00	7,1	0,28	6,35 ± 0,38	0,25 ± 0,015	0,1	0,004	*	
													
Straight lever	F1T8Y1GPUL	0,5	1,8	0,06	0,022	11,0	0,43	8,5 ± 1,5	0,33 ± 0,06	0,5	0,02	*	
													

Width of lever 4.05 mm/0.16 in

* Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic type	F1	Example: F1 T8 Y1 GP UL				
Terminals	T8	PCB	1,25 × 0,5 × 2,9 long			
Actuators	No symbol, without lever					
	Y1	Plain lever 21.0 mm				
	YR1	Roller lever 16.0 mm				
Contacts Material	No symbol, Ag					
	GP	Gold plate on Ag (GP)				
Approvals	No symbol, without approval					
	UL	UL and CSA approval				
Special Features	 Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.					

F1N

Snap-action Microswitches

Ultraminiature

F1N

- Characteristics
- small size
 - low current
 - long mechanical life
 - PCB mounting
 - sealed IP54 (option)

Rating Up to 250 VAC, 1 A

Dimensions (mm) 16 × 6.5 × 6

- Actuator
- plunger
 - plain lever
 - simulated roller lever/cam follower

Approvals none



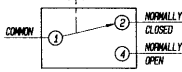
Preferred Range

Ordering Reference	Actuating Force (N) (ozf)		Sealing	Operating pos. (mm)	Terminal	Circuit	Actuator	Contacts	Electrical rating
F1NST8	2.0	7.2	IP5K4	5.9	PCB	CO	Plunger	Ag	250 VAC, 1 A
F1NST8A1	0.6	2.2	IP5K4	7.6	PCB	CO	Plain lever	Ag	250 VAC, 1 A
F1NST8AC	0.6	2.2	IP5K4	10.1	PCB	CO	Cam follower	Ag	250 VAC, 1 A

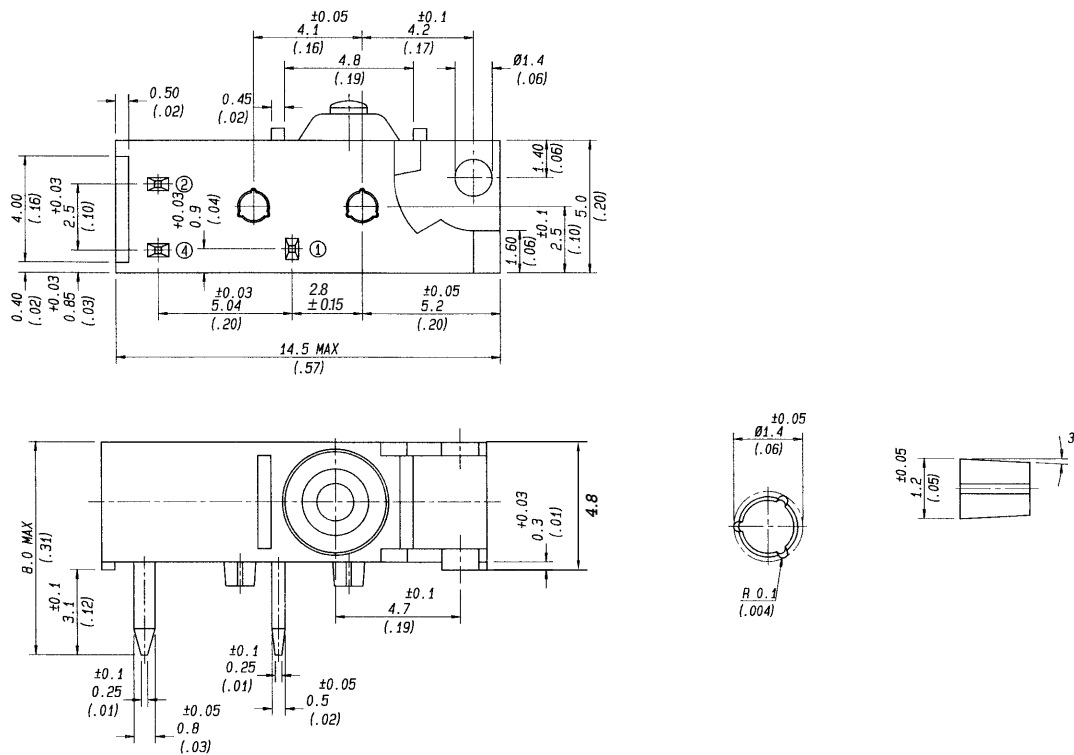
Specifications

Housing	Base: PA66 GF30; Cowl: Silicon; Lid: PA 66
Plunger	POM
Mechanism	Snap-action, coil spring mechanism with stainless steel spring. Single-pole change-over contact
Contacts	Fine silver, Gold plate on silver
Terminals	PCB silver plated
Temperature range °C	-40°C bis +85°C
Mechanical life	10 ⁷ cycles minimum (impact-free actuation)
Protection	Enclosure IP40 (F1N), IP54 (F1NS)
Mounting	PCB. Locating pins on housing

Circuit diagram



Dimensions



Recommended maximum electrical ratings

Voltage (VAC)	Resistive load (A)	Inductive load (A)	Voltage (VAC)	Resistive load (A)	Inductive load (A)
125	1	1	up to		
250	1	1	30	2	2
			50	0.5	0.5
			75	0.25	0.25
			125	0.2	0.03

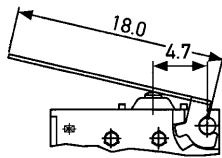
F1N

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential Maximum		Total travelled position Maximum	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Plunger	F1NST8	2	7.20	0.2	0.72	6.5	0.26	5.9 ± 0.2	0.23 ± 0.008	0.2	0.008	*	

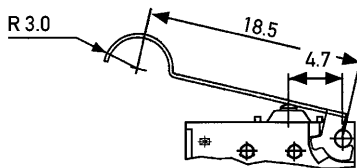


A1-Lever	F1NST8A1	0.6	2.20	0.09	0.32	10.5	0.41	7.6 ± 1.2	0.3 ± 0.05	0.7	0.03	*	
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Width of lever 3 mm/0.12 in

AC-Lever	F1NST8AC	0.6	2.20	0.09	0.32	13.3	0.52	10.1 ± 1.2	0.4 ± 0.05	0.7	0.03	*	
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Width of lever 3 mm/0.12 in

Datum for Free Position and Operating Position: base of switch opposite plunger.

* Flush with case. The case should not be used as an end stop.

Type coding key for standard products

Basic type	F1N	Example: F1N	S	T8	C2	A	AU
Type of sealing	S	No symbol, unsealed Sealed IP5K4					
Terminals	T8	PCB 0.8 × 0.5 × 3.45 long					
Circuit	C2 C4	No symbol, change-over Normally closed Normally open					
Actuators	A A1 AC	No symbol, without lever Special lever A type (see specification) Plain lever 18.0 mm Cam follower lever 18.5 mm					
Contact Material	AU GP	No symbol, Ag Gold on nickel Gold plate on Ag (GP)					
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.					

X5

Snap-action Microswitches

Ultraminiature

X5

Characteristics ■ small size
■ low current
■ PCB mounting

Rating 250 VAC, 1.5 A

Dimensions (mm) 13 × 6.5 × 6

Actuator ■ plunger
■ plain lever

Approvals UL, CSA



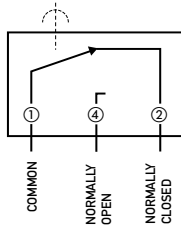
Preferred Range

Ordering Reference	Actuating Force (N)	Sealing	Operating Position (mm)	Terminal	Circuit	Actuator	Contacts	Electrical Rating
X5G303K1AN	1.5	IP40	5.5	PCB	CO	Plunger	Ag	250 VAC, 1.5 A, 125 VAC, 3 A
X5G303K1ANJ1	0.5	IP40	7.2	PCB	CO	Lever	Ag	250 VAC, 1.5 A, 125 VAC, 3 A

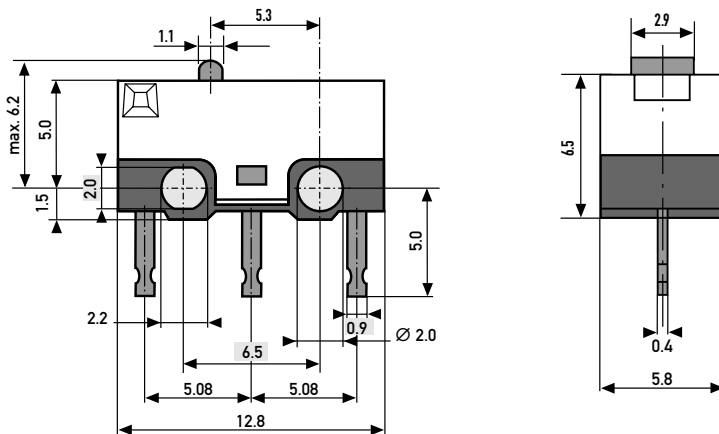
Specifications

Housing	Thermoplastic
Plunger	Thermoplastic
Mechanism	Snap-action system with steel tension spring functions
Contacts	Silver
Terminals	PCB
Temperature range °C	75° C
Mechanical life	5–10 ⁵ cycles minimum
Protection	IP40 (enclosure)
Mounting	PCB, Side mounting
Actuators	Plunger, lever
Contact carrier	Brass

Circuit diagram



Dimensions



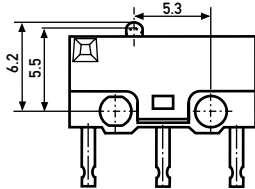
Recommended maximum electrical ratings

Voltage (VAC)	Resistive load (A)
125	3
250	1,5

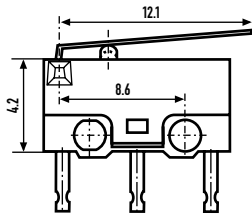
X5

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential		Full Overtravel Position	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Plunger	X5G3	1.5	5,35	0,2	0,72	6,2	0,24	5,5 ± 0,3	0,22 ± 0,01	0,2	0,008	5	0,2



J-Lever	X5G3...J1	0,5	1,80	0,05	0,18	9,5	0,37	7,2 ± 1,5	0,28 ± 0,06	0,8	0,032	5,3	0,21
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Width of lever 3,6 mm/0.14 in

Type coding key for standard products

Basic type	X5	Example: X5 G 3 03 K 1 A J0											
Operating force	G	Standard	Fs max. 150 cN										
Circuit diagram	3	Change-over											
Terminals	03	PCB, vertical											
	10	PCB, Formed to the left = view from lever											
	11	PCB, Formed to the right = view from lever											
Body/ moving system	K	Material	Thermoplastic										moving system
	M	lid:	PC black										A
	N	base:	PA 66 GF 25 copperbrown										A
	P	lid:	PC black										E
		base:	PA 66 GF 25 copperbrown										E
Contacts material	1	Ag / Ag											
	8	Gold Microprofile (Crossbar-contact)											
UL/cUL/CSA ratings	A	1.5 A, 250 VAC approved											
	N	3.0 A, 125 VAC approved											
		No approved											
Type of actuator		No symbol, without lever											
	J0 to J9	Straight lever											
	L0 to L9	Cam follower											
	M0 to M9	Formed lever											

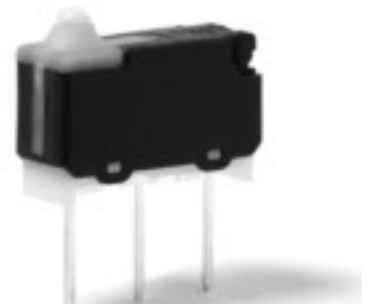
F6

Snap-action Microswitches

Ultraminiature

F6

Characteristics	<ul style="list-style-type: none">■ small size■ sealed (IP6K7)■ PCB mounting
Rating	12–30 VDC, 5–300 mA
Dimensions (mm)	14.7 × 9 × 5.4
Actuator	<ul style="list-style-type: none">■ plunger■ plain lever
Approvals	none



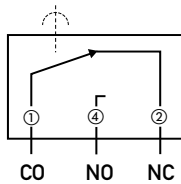
Preferred Range

Ordering Reference	Actuating Force (N)	Sealing	Operating pos. (mm)	Terminal	Circuit	Actuator	Contacts	Electrical rating
F6T85	1.6	IP6K7	10.8	PCB	CO	Plunger	Gold plated	30 VDC, 300 mA

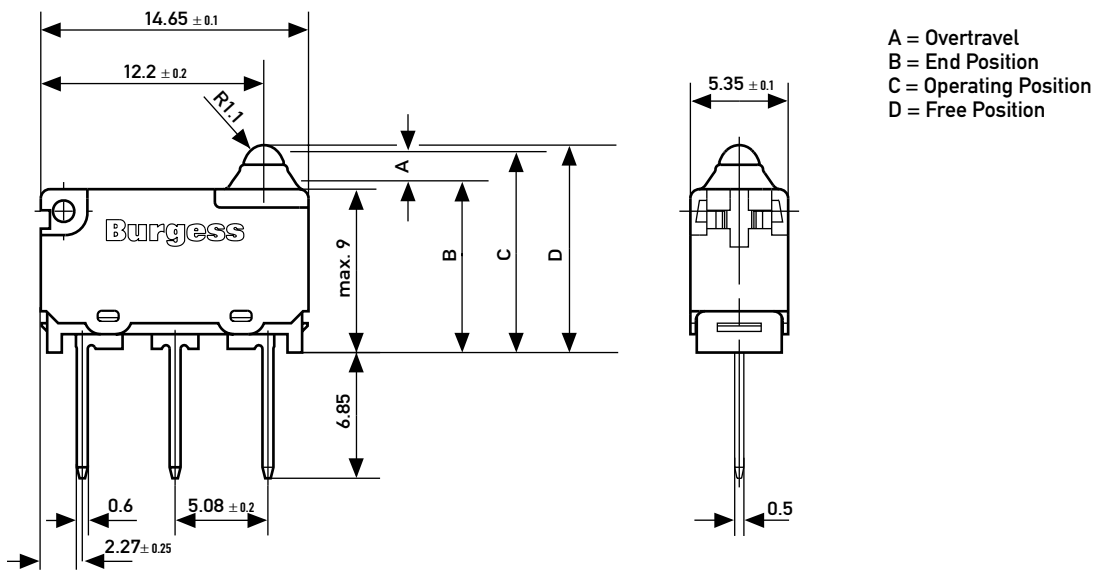
Specifications

Base	PBT
Lid	PP GF30
Plunger	POM
Mechanism	Leaf spring
Contacts	Gold plated on silver
Terminals	CuZn silver plated
Temperature range °C	-40°C up to +90°C
Mechanical life	Up to 1 mio. cycles
Protection	IP67
Actuators	Plain plunger, lever, cam follower
Cowl	TPE

Circuit diagram



Dimensions



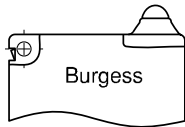
Recommended maximum electrical ratings

	Voltage (VDC)	Resistive load (A)	Cycles
F6	12 to 30	0.005 – 0.3	500.000

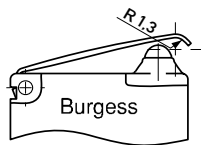
F6

Operating Characteristics

Actuator	Reference	Actuating Force Maximum (N)	Release Force Minimum (N)	Free Position Maximum (mm)	Operating Position (mm)	Movement Differential Maximum (mm)	Total travelled positions Maximum (mm)
Plunger	F6T85	1,6	0,2	11,35	10,8 ± 0,2	0,3	9,5



Actuator	Reference	Actuating Force Maximum (N)	Release Force Minimum (N)	Free Position Maximum (mm)	Operating Position (mm)	Movement Differential Maximum (mm)
H-Lever	F6T85H	2,5	0,5	12,9	11,3 + 0,35	0,45



Width of lever 3.0 mm/0.12 in

Datum for free position and operating position is button edge of base (stand-off's).
The case should not be used as an end stop.

Type coding key for standard products

Basic type	F6	Example: F6	T8	C2	H
Terminals	No symbol, pre-wired 500 mm with cable box K				
T8	PCB	0.6 × 0.5 × 4.0 long			
T81	Formed PCB	side B			
T82	Formed PCB	side A			
T84	Short PCB	0.6 × 0.5 × 2.0 long			
T85	Long PCB	0.6 × 0.5 × 6.85 long			
T87	Long PCB	side A, for flexible PCB			
T88	Long PCB	side B, for flexible PCB			
Circuit	No symbol, change-over				
C2	Normally closed				
C4	Normally open				
Actuators	No symbol, without lever				
H	Formed, lever 0.3 mm thickness				
Y	Special lever Y-clip-on				
Y1	Plain lever mm				
YC	Cam follower lever				
HC	Cam follower				
Contact Material	No symbol, Ag, gold plated				
Special Features	/ □ □ □ □	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.			

FK4

Snap-action Microswitches

Ultraminiature

FK4

- Characteristics
- double break switching
 - long mechanical and electrical life
 - solder, 2 mm faston and PCB mounting
 - snap-action

Rating 250 VAC, 5 A

Dimensions (mm) 18 × 8 × 5

- Actuator
- plunger
 - plain lever
 - simulated roller lever/cam follower

Approvals UL and CSA



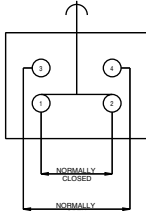
Preferred Range

Ordering Reference	Actuating Force (N) (ozf)		Sealing	Operating pos. (mm) (in)		Terminal	Circuit	Actuator	Contacts	Electrical rating
FK4T7UL	1.8	6.5	IP40	8.25	0.32	Solder	SPDT	Plunger	Ag	Up to 250 VAC, 5 A
FK4T7Y1UL	0.8	2.9	IP40	8.25	0.32	Solder	SPDT	Plain lever	Ag	Up to 250 VAC, 5 A
FK4T7YCUL	1.0	3.6	IP40	10.40	0.41	Solder	SPDT	Simulated roller	Ag	Up to 250 VAC, 5 A
FK4T8UL	1.8	6.5	IP40	11.60	0.45	PCB	SPDT	Plunger	Ag	Up to 250 VAC, 5 A
FK4T8Y1UL	0.8	2.9	IP40	11.55	0.45	PCB	SPDT	Plain lever	Ag	Up to 250 VAC, 5 A
FK4T8YCUL	1.0	3.6	IP40	13.70	0.54	PCB	SPDT	Simulated roller	Ag	Up to 250 VAC, 5 A

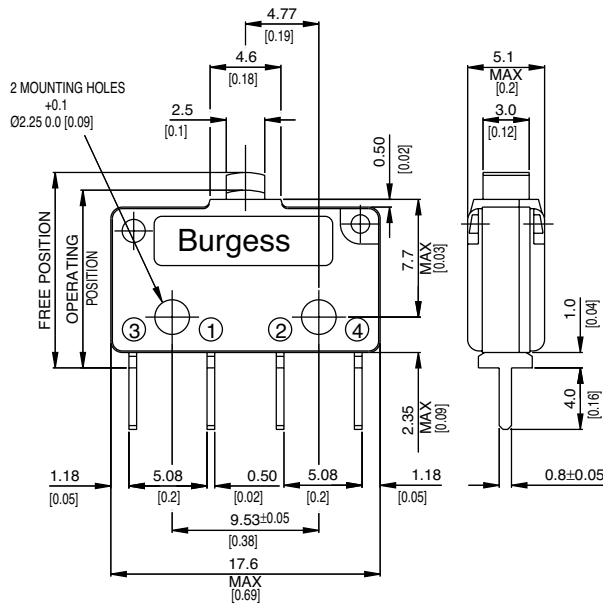
Specifications

Housing	Glass fibre reinforced nylon
Plunger	Nylon
Mechanism	Double pole, single throw snap-action coil spring mechanism with stainless steel springs
Functions	Change-over, NO, NC
Contacts	Silver
Terminals	Solder, PCB - brass, gold flashed
Temperature range °C	-40°C to +85°C
Mechanical life	10 ⁷ cycles minimum (impact free actuation)
Protection	IP40 (enclosure)
Mounting	Side mounting or PCB mounting (T8 only)
Actuators	Plain lever, simulated roller lever/cam follower
Accessory	Insulating sheet

Circuit diagram



Dimensions



Recommended maximum electrical ratings

Voltage (max)	Load (A)	Approval
250 VAC	5 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations
125 VAC	5 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	5	General rating - 50,000 operations
15 - 30 VDC	3	General rating - 50,000 operations

Values shown are recommended maximum ratings for single circuit switching

FK4

Operating Characteristics

Actuator	Reference	Actuating Force		Release Force		Free Position Maximum		Operating Position		Movement Differential Maximum	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)
 Plunger	FK4T7*	1.8	6.50	0.25	0.9	9.4	0.37	8.25 ± 0.25	0.32 ± 0.01	0.50	0.02
	FK4T8 ¹⁾	1.8	6.50	0.25	0.9	12.75	0.50	11.60 ± 0.45	0.45 ± 0.02	0.50	0.02
 Y1 Lever	FK4T7Y1	0.8	2.90	0.09	0.3	12.1	0.48	8.25 ± 0.9	0.32 ± 0.04	1.85	0.07
	FK4T8Y1	0.8	2.90	0.09	0.3	15.6	0.61	11.55 ± 1.1	0.45 ± 0.04		
Width of lever 3.0 mm/0.12 in											
 YC Lever	FK4T7YC	1.0	3.60	0.1	0.4	13.5	0.53	10.40 ± 0.6	0.41 ± 0.02	1.30	0.05
	FK4T8YC	1.0	3.60	0.1	0.4	17.0	0.67	13.70 ± 0.8	0.54 ± 0.03		
Width of lever 3.0 mm/0.12 in											

Overtravel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Datum for free position and operating position

* FK4T7 – Centre of fixing hole

¹⁾ FK4T8 – Terminal shoulder

Type coding key for standard products

Basic type	FK4	Example: FK4 T7 Y1 UL											
Terminals	T7	Solder	0.5 × 3.5										
	T8	PCB	0.5 × 0.8										
Actuators		No symbol, plunger											
	Y1	Plain lever											
	YC	Simulated roller lever/cam follower											
Approvals	UL	UL and CSA											

M0

Snap-action Microswitches

Mid off

M0

- Characteristics
- mid-off function
 - sealed (IP6K7)
 - spring return to centre
 - toggle action
 - long overtravel

Rating 12 VDC, 100 mA

Dimensions (mm) 13 × 25.5 × 5.5

Actuator ■ toggle

Approvals none



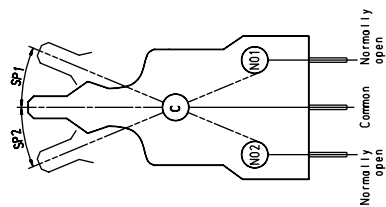
Preferred Range

Ordering Reference	Sealing	Free position (°)	Operating position (°)	Max. Angel (°)	Actuating Directing	Terminal	Contacts
M0T11	IP6K7	0°	10° ± 4°	31°	CCW/CW	Solder	Ag/Palladium, gold plated

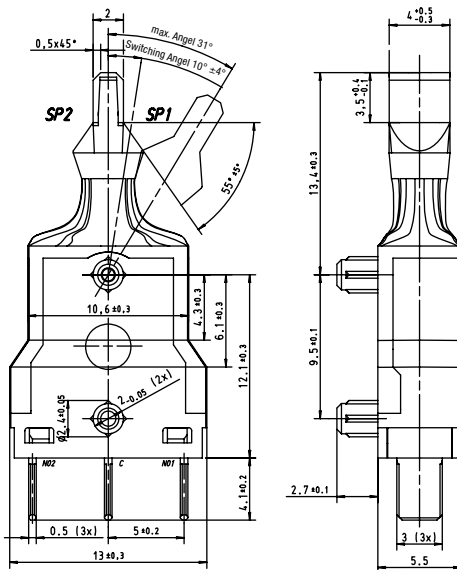
Specifications

Housing	PP + GF
Base	PA + GF
Mechanism	Leaf spring mechanism
Pendulum	PA
Contacts	Silver/Palladium, gold plated
Terminals	Brass
Temperature range °C	-40°C to +85°C
Mechanical life	Up to 200'000 cycles
Protection	IP67
Mounting	Pegs
Cowl	TPE

Circuit diagram



Dimensions



M0

Recommended electrical ratings

Voltage VAC	Resistive load max. A
12	0,1
Voltage VAC	Resistive load min. A
12	0,005
Voltage VDC	Resistive load max. A
12	0,1
Voltage VDC	Resistive load min. A
12	0,005

Operating Characteristics

	Reference	Free position Angle CCW (°)	Switching Angle CCW (°)	Maximum Angel CW (°)	Free position Angel CW (mm)	Switching Angel CW (°)	Maximum Angel (°)
Plunger	M0T11	0°	10° ± 4°	31°	0°	10° ± 4°	31°

Type coding key for standard products

Basic type	M0				Example: M0 T11
Terminals	T11	Faston	3.0 × 0.5 × 4.1 long		
Special Features	/	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			

Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.



Switches

Snap-action Microswitches, Subminiature	Type	Preferred Products	Page
	XC	XCG3Z1 XCG3-J1Z1 XCG3-S1Z1 XCG5Z1 XCG5-J1Z1 XCG5-S1Z1 XCG8Z1 XCG8-81Z1 XCG8-81-J1Z1 XCG8-81-S1Z1 XCF3Z1 XCF3-J1Z1 XCF3-S1Z1 XCG3-U1Z1 XCG4-U1Z1 XCG8-U1Z1	44
	X4	X4F303K1AA X4F305K1AA X4G303K1BB X4G305K1BB X4C303K1CC X4C305K1CC	48
	V4NC	V4NCT7 V4NCT7A1 V4NCT7AR V4NCS V4NCSA1 V4NCSAR	52
	V4N	V4NT7UL V4NST7UL V4NSUL V4NT7Y1UL V4NST7Y1UL V4NSY1UL V4NT7YRUL V4NST7YRUL V4NSYRUL	56
	V4L	V4LSK2 V4LSA1 V4LSA2 V4LST7 V4LST7A1 V4LST7A2 V4LT7	60

XC

Snap-action Microswitches

Subminiature

XC

Characteristics ■ wide range of forces and variants
 ■ long mechanical and electrical life
 ■ solder, PCB and faston terminals

Rating 250 VAC, 10 A max.

Dimensions (mm) 19.9 × 9.5 × 6.4

Actuator ■ Plunger
 ■ mushroom plunger
 ■ plain levers
 ■ simulated roller lever/cam follower
 ■ roller levers

Approvals ENEC, UL, cUL, CSA



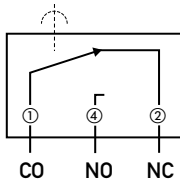
Preferred Range

Ordering Reference	Actuating Force (N)	Actuating Force (ozf)	Operating pos. (mm)	Operating pos. (in)	Terminal	Circuit	Actuator	Contacts	Electrical rating ENEC	UL/CSA
XCG3Z1	1.7	6.07	8.4	0.33	Solder	CO	Plunger	Ag	6(2) A	5 A
XCG3-J1Z1	0.6	2.14	10.2	0.40	Solder	CO	Plain lever	Ag	6(2) A	5 A
XCG3-S1Z1	0.7	2.49	15.6	0.61	Solder	CO	Roller lever	Ag	6(2) A	5 A
XCG5Z1	1.7	6.07	8.4	0.33	Faston 2.8 × 0.5 mm	CO	Plunger	Ag	6(2) A	5 A
XCG5-J1Z1	0.6	2.14	10.2	0.40	Faston 2.8 × 0.5 mm	CO	Plain lever	Ag	6(2) A	5 A
XCG5-S1Z1	0.7	2.49	15.6	0.61	Faston 2.8 × 0.5 mm	CO	Roller lever	Ag	6(2) A	5 A
XCG8-81Z1	1.7	6.07	8.4	0.33	PCB	CO	Plunger	Au	none	0.1 A / 125 VAC
XCG8-81-J1Z1	0.6	2.14	10.2	0.40	PCB	CO	Plain lever	Au	none	0.1 A / 125 VAC
XCG8-81-S1Z1	0.7	2.49	15.6	0.61	PCB	CO	Roller lever	Au	none	0.1 A / 125 VAC
XCF3Z1	3	10.70	8.4	0.33	Solder	CO	Plunger	Ag	10(3) A	10.1 A
XCF3-J1Z1	1.05	3.74	10.2	0.40	Solder	CO	Plain lever	Ag	10(3) A	10.1 A
XCF3-S1Z1	1.1	3.92	15.6	0.61	Solder	CO	Roller lever	Ag	10(3) A	10.1 A
XCG3-U1Z1	1.7	6.07	9.9	0.39	Solder	CO	Mushroom plunger	Ag	6(2) A	5 A
XCG4-U1Z1	1.7	6.07	9.9	0.39	Faston 2.8 × 0.5 mm	CO	Mushroom plunger	Ag	6(2) A	5 A
XCG8-U1Z1	1.7	6.07	9.9	0.39	PCB	CO	Mushroom plunger	Ag	6(2) A	5 A

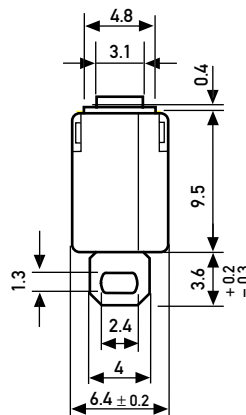
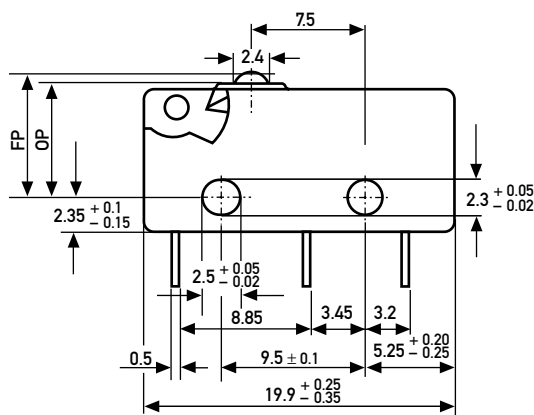
Specifications

Housing	Melamine-Formaldehyd, Thermosetting
Plunger	POM for T85, PBT for T125, PPS for T150
Mechanism	Snap-action system with stainless steel tension spring
Functions	Change-over, NO, NC
Contacts	Fine silver (Ag) or 10 µm Gold (Au), microprofile
Terminals	Solder, faston and various PCB terminals (side of housing or side of lid, as well as 1/10" o lin pitch)
Temperature range °C	Between -40°C and +85°C (special version up to 140°C)
Mechanical life	up to 5-10 ⁷ cycles (sinusoidal actuation)
Protection	Enclosure IP40
Mounting	Side mounting through mounting holes
Actuators	Stainless steel, PA66-GF35
Contact Carrier	CuZn or CuSn

Circuit diagram



Dimensions



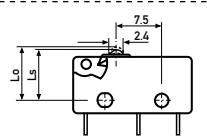
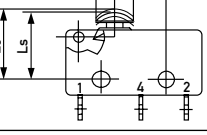
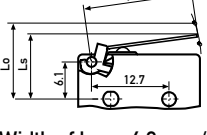
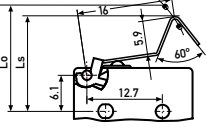
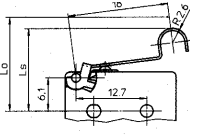
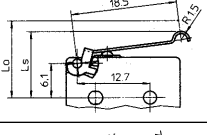
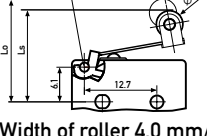
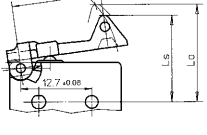
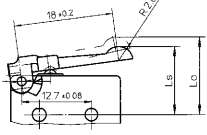
FP = Free Position
OP = Operating Position

Recommended maximum electrical ratings

	Voltage (VAC)	Resistive load (A)	Motor load (A)	Approvals ENEC (A)		Approvals UL (A)		Motor load	
				(A)	(VAC)	(A)	(VAC)		
XCF	250	10	3	10 (3)	1E4	250	10.1	125/250	¼HP
XCG	250	6	2	6 (2)	5E4	250	5	250	-
XCK	250	5	3	5 (3)	1E4	250	5	250	-
XCC	250	3	1	3 (1)	5E4	250	2	250	-
XCH	250	1.5	0.3	1.5 (0.3)	5E4	250	1	250	-

Breaking capacities in the tables refer to Ag contacts.

Operating Characteristics

Actuator	Reference	Actuating Force		Release Force		Free Position		Operating Position		Movement Differential		Total travelled position		
		Maximum (N)	(ozf)	Minimum (N)	(ozf)	Maximum (mm)	(in)	Maximum (mm)	(in)	Maximum (mm)	(in)	Maximum (mm)	(in)	
	XCF..	3	10.70	0.5	1.78	8.8	0.34	8.4	$\left. \begin{matrix} 0.33 \\ 0.33 \\ 0.33 \\ 0.33 \end{matrix} \right\} \begin{matrix} +0.1 \\ -0.3 \end{matrix}$	$\left. \begin{matrix} 0.33 \\ 0.33 \\ 0.33 \\ 0.33 \end{matrix} \right\} \begin{matrix} +0.003 \\ -0.011 \end{matrix}$	0.1	0.003	7.7	0.303
	XCG..	1.7	6.07	0.3	1.07	8.8	0.34	8.4						
	XCK..	1.2	4.28	0.2	0.71	8.8	0.34	8.4						
	XCC..	0.6	2.14	0.1	0.36	8.8	0.34	8.4						
	XCH..	0.35	1.24	0.07	0.24	8.8	0.34	8.4						
	XCF..-U1	3	10.70	0.5	1.78	10.3	0.41	9.9	$\left. \begin{matrix} 0.39 \\ 0.39 \\ 0.39 \\ 0.39 \end{matrix} \right\} \begin{matrix} +0.1 \\ -0.3 \end{matrix}$	$\left. \begin{matrix} 0.39 \\ 0.39 \\ 0.39 \\ 0.39 \end{matrix} \right\} \begin{matrix} +0.003 \\ -0.011 \end{matrix}$	0.1	0.003	9.2	0.36
	XCG..-U1	1.7	6.07	0.3	1.07	10.3	0.41	9.9						
	XCK..-U1	1.2	4.28	0.2	0.71	10.3	0.41	9.9						
	XCC..-U1	0.6	2.14	0.1	0.36	10.3	0.41	9.9						
	XCH..-U1	0.35	1.24	0.07	0.24	10.3	0.41	9.9						
	XCF..	1.05	3.74	0.16	0.57	12.2	0.48	10.2 ± 1.0	0.401 ± 0.039	0.6	0.023	8.4	0.33	
	XCG..	0.6	2.14	0.08	0.28	12.2	0.48	10.2 ± 0.9						
	XCK..	0.42	1.49	0.056	0.19	12.2	0.48	10.3 ± 0.9						
	XCC..	0.22	0.78	0.025	0.08	12.2	0.48	10.3 ± 0.9						
	XCH..	0.13	0.46	0.02	0.07	12.2	0.48	10.4 ± 0.9						
Width of lever 4.0 mm/0.16 in														
	XCF..	1.1	3.92	0.17	0.6	17.6	0.69	15.6 ± 1.1	0.614 ± 0.043	0.6	0.023	14	0.551	
	XCG..	0.7	2.49	0.09	0.32	17.6	0.69	15.6 ± 1.0						
	XCK..	0.43	1.53	0.058	0.2	17.6	0.69	15.7 ± 1.0						
	XCC..	0.23	0.82	0.026	0.09	17.6	0.69	15.7 ± 1.0						
	XCH..	0.14	0.49	0.021	0.07	17.6	0.69	15.8 ± 1.0						
Width of lever 4.0 mm/0.16 in														
	XCF..	1.05		0.16		17.1		15.1 ± 1.1	0.6			13.3		
	XCG..	0.6		0.08		17.1		15.1 ± 1.0						
	XCK..	0.42		0.056		17.1		15.2 ± 1.0						
	XCC..	0.22		0.025		17.1		15.2 ± 1.0						
	XCH..	0.13		0.02		17.1		15.3 ± 1.0						
	XCF..	1.05		0.16		13.7		11.7 ± 1.1	0.6			9.9		
	XCG..	0.6		0.08		13.7		11.7 ± 1.0						
	XCK..	0.42		0.056		13.7		11.8 ± 1.0						
	XCC..	0.22		0.025		13.7		11.8 ± 1.0						
	XCH..	0.13		0.02		13.7		11.9 ± 1.0						
	XCF..	1.1	3.92	0.17	0.6	17.6	0.69	15.6 ± 1.2	0.614 ± 0.047	0.6	0.023	14.1	0.555	
	XCG..	0.7	2.49	0.09	0.32	17.6	0.69	15.6 ± 1.1						
	XCK..	0.43	1.53	0.058	0.2	17.6	0.69	15.7 ± 1.1						
	XCC..	0.23	0.82	0.026	0.09	17.6	0.69	15.7 ± 1.1						
	XCH..	0.14	0.49	0.021	0.07	17.6	0.69	15.8 ± 1.1						
Width of roller 4.0 mm/0.16 in. for high temperature use -T1 lever														
	XCF..	1.3	4.62	0.17	0.6	17.6	0.69	15.6 ± 1.1	0.614 ± 0.043	0.6	0.023	14	0.551	
	XCG..	0.75	2.67	0.09	0.32	17.6	0.69	15.6 ± 1.0						
	XCK..	0.6	2.13	0.058	0.2	17.6	0.69	15.7 ± 1.0						
	XCC..	0.31	1.10	0.026	0.09	17.6	0.69	15.7 ± 1.1						
	XCH..	0.22	0.78	0.021	0.07	17.6	0.69	15.8 ± 1.0						
	XCF..	1.05	3.74	0.16	0.57	14.3	0.56	12.5 ± 1.1	0.49 ± 0.043	0.6	0.023	10.6	0.417	
	XCG..	0.6	2.13	0.08	0.28	14.3	0.56	12.5 ± 1.0						
	XCK..	0.42	1.49	0.056	0.21	14.3	0.56	12.6 ± 1.0						
	XCC..	0.22	0.78	0.025	0.11	14.3	0.56	12.6 ± 1.0						
	XCH..	0.13	0.46	0.02	0.07	14.3	0.56	12.7 ± 1.0						

Type coding key for standard products

Basic type	XCF	3 N	10,7 ozf	Example: XCF	4	3	V	-81	-J1	Z1
	XCG	1,7 N	6,07 ozf							
	XCK	1,2 N	4,28 ozf							
	XCC	0,6 N	2,14 ozf							
	XCH	0,35 N	1,24 ozf							
Circuits	No symbol, change-over									
	4	Normally closed (NC)								
	5	Normally open (NO)								
Terminals	3	Solder								
	4	plug 2.8 × 0.5 mm DIN								
	5	plug 2.8 × 0.5 mm AMP								
	8	PCB, L = 4.5 mm								
	9	PCB, 1/10" pitch, L = 4.5 mm								
	10	PCB, formed to base								
	11	PCB, formed to lid								
	12	PCB, formed to base, 1/10" pitch								
	13	PCB, formed to lid, 1/10" pitch								
	14	PCB, L = 3.5 mm								
	15	PCB, 1/10" pitch, L = 3.5 mm								
Version	No symbol, Housing material MF, Europe up to 85°C, UL up to 90°C									
	V	(High temperature 125°C), Housing material MF / Plunger PBT, Europe up to 125°C, UL up to 130°C								
	W	(High temperature 140°C), Housing material MF / Plunger PPS, Europe up to 140°C, UL up to 150°C								
Contacts	No symbol, Ag (Ag)									
	-81	μ profile Au 10 μm								
Actuators	No symbol, plunger									
	-J1	Plain lever 18,0 mm (0.71 in)								
	-J2	Plain lever 25,0 mm (0.98 in)								
	-J5	Plain lever 40,0 mm (1.57 in)								
	-S1	Roller lever 16,0 mm (0.63 in)								
	-L1	Cam follower 16,0 mm (0.63 in)								
	-L6	Cam follower 18,0 mm (0.71 in)								
	-L9	Cam follower 18,5 mm (0.73 in)								
	-P5	Plastic lever 16,0 mm (0.63 in)								
	-P6	Plastic lever 18,0 mm (0.71 in)								
	-U1	Mushroom plunger								
	Other actuators on special request.									
Approvals	No symbol, ENEC (except -81 contacts)									
	Z1	UL, CSA								

X4

Snap-action Microswitches

Subminiature

X4

Characteristics ■ thermoplastic housing
■ long mechanical and electrical life
■ solder, PCB and faston terminals

Rating 250 VAC, 12 A max.

Dimensions (mm) 19.9 × 9.7 × 6.4

Actuator ■ plunger
■ plain levers
■ cam follower lever
■ roller levers

Approvals UL, cUL, CSA, ENEC, CQC



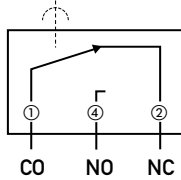
Preferred Range

Ordering Reference	Actuating Force		Operating pos. (mm)	Terminal	Circuit	Actuator	Contacts	Electrical rating	
	(N)	(ozf)						ENEC	UL/CSA
X4F303K1AA	3.3	11,869	8.4	Solder	CO	Plunger	Ag	12 (6) A	12 A
X4F305K1AA	3.3	11,869	8.4	Faston	CO	Plunger	Ag	12 (6) A	12 A
X4G303K1BB	2	7,193	8.4	Solder	CO	Plunger	Ag	6 (3) A	6 A
X4G305K1BB	2	7,193	8.4	Faston	CO	Plunger	Ag	6 (3) A	6 A
X4C303K1CC	0.75	2,697	8.4	Solder	CO	Plunger	Ag	3 (2) A	3 A
X4C305K1CC	0.75	2,697	8.4	Faston	CO	Plunger	Ag	3 (2) A	3 A

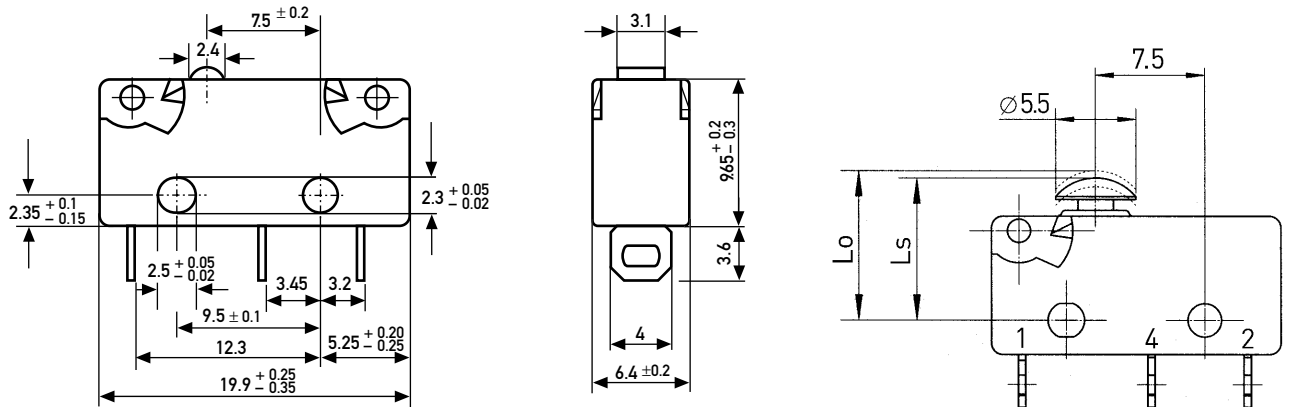
Specifications

Housing	Thermoplastic
Plunger	Thermoplastic
Mechanism	Snap-action system with stainless steel tension spring
Functions	Change-over, NO, NC.
Contacts	Fine silver (Ag), or 10 µm Gold (Au), microprofile
Terminals	Solder, faston, PCB, side-facing PCB and 'PCB terminals with 0.1" pitch
Temperature range °C	Between -40°C and +85°C
Mechanical life	10 ⁶ cycles minimum
Protection	Enclosure – IP 40
Mounting	Side mounting or PCB
Actuators	Stainless steel, PA66–GF35
Contact carrier	CuZn or CuSn

Circuit diagram



Dimensions

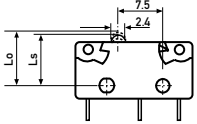
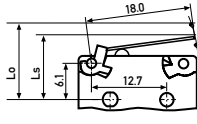
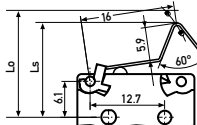
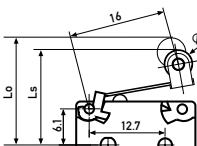


Recommended maximum electrical ratings

	Voltage (VAC)	Resistive load (A)	Motor load (A)	Approvals ENEC (A)		(VAC)	Approvals UL (A)		(VAC)
X4F	250	12	6	12 (6)	1E4	250	12	125/250	
X4G	250	6	3	6 (3)	5E4	250	6	125/250	
X4C	250	3	2	3 (2)	5E4	250	3	125/250	

Breaking capacities in the tables refer to silver contacts

Operating Characteristics

Actuator	Reference	Actuating Force		Release Force		Free Position		Operating Position		Movement Differential		Full Overtravel	
		Maximum (N)	(ozf)	Minimum (N)	(ozf)	Maximum (mm)	(in)	Maximum (mm)	(in)	Maximum (mm)	(in)	Maximum (mm)	(in)
	X4F	3.3	11.869	0.55	1.978	8.8	0.35	8.4	$\left. \begin{matrix} 0.33 \\ +0.1 \\ -0.3 \end{matrix} \right\} 0.33$	$\left. \begin{matrix} 0.2 \\ +0.004 \\ -0.01 \end{matrix} \right\} 0.2$	0.008	7.7	0.3
	X4G	2.0	7.193	0.35	1.258	8.8	0.35	8.4					
	X4C	0.75	2.697	0.13	0.467	8.8	0.35	8.4					
	X4F	1.16	4.172	0.18	0.647	12.2	0.48	10.2 ±1.0	0.4 ±0.035	0.6	0.024	8.4	0.33
	X4G	0.7	2.517	0.094	0.338	12.2	0.48	10.2 ±0.9	0.4 ±0.039	0.5	0.02	8.5	0.33
	X4C	0.28	1.007	0.031	0.107	12.2	0.48	10.3 ±0.9	0.4 ±0.039	0.4	0.016	8.7	0.34
Width of lever 4.0 mm/0.16 in													
	X4F	1.21	4.352	0.19	0.683	17.6	0.69	15.6 ±1.1	0.61 ±0.043	0.6	0.024	14	0.55
	X4G	0.82	2.949	0.11	0.395	17.6	0.69	15.6 ±1.0	0.61 ±0.039	0.5	0.02	14.1	0.56
	X4C	0.29	1.043	0.033	0.118	17.6	0.69	15.7 ±1.0	0.61 ±0.039	0.4	0.016	14.3	0.56
Width of lever 4.0 mm/0.16 in													
	X4F	1.21	4.352	0.19	0.683	17.6	0.69	15.6 ±1.2	0.61 ±0.047	0.6	0.024	14.1	0.56
	X4G	0.82	2.949	0.11	0.395	17.6	0.69	15.6 ±1.1	0.61 ±0.043	0.5	0.02	14.2	0.56
	X4C	0.29	1.043	0.036	0.129	17.6	0.69	15.7 ±1.1	0.62 ±0.043	0.4	0.016	14.4	0.57
Width of roller 4.0 mm/0.16 in													

Type coding key for standard products

Basic type	X4	Example: X4	F	3	03	K	1	A	A	J1	1											
Operating force	F	extra high force	G	high force	C	low force																
Circuits diagram	3	Change-over (CO)	4	Normally closed (NC)	5	Normally open (NO)	} with X4F and X4G not possible (except gold contacts)															
Terminals	03	Solder terminal	04	Faston terminal 2.8 × 0.5 mm DIN	05	Faston terminal 2.8 × 0.5 mm	08	PCB-terminal, length 4.5 mm	09	PCB-terminal, length 4.5 mm, (pitch 7.6)	10	PCB-terminal, formed to base	11	PCB-terminal, formed to lid	12	PCB-terminal, formed to base, (pitch 7.6)	13	PCB-terminal, formed to lid, (pitch 7.6)	14	PCB-terminal, length 3.5 mm	15	PCB-terminal, length 3.5 mm, (pitch 7.6)
Body	K	with unequally-spaced terminals																				
Contacts material	1	Silver/Silver	8	Gold microprofile (Crosspoint) contacts	9	Gold-plated																
UL/C-UL ratings	A	12 A, 125/250 VAC	B	6 A, 125/250 VAC	C	3 A, 125/250 VAC	D	0.1 A, 125 VAC	N	no approvals												
EN/IEC ratings	A	12 (6) A, 250 V~ 1E4 T85 μ approved	B	6 (3) A, 250 V~ 5E4 T85 μ approved	C	3 (2) A, 250 V~ 5E4 T85 μ approved	F	10 (4) A, 250 V~ 1E4 T125 μ approved	L	1 A, 30 V = not approved	M	0.3 A, 30 V~ 1E4 not approved	S	special approval according to EN 60947-5-1								
Type of actuators		No symbol, without lever		J1	Plain lever	18.0 mm (0.71 in)	L1	Cam follower	16.0 mm (0.63 in)	S1	Roller lever	16.0 mm (0.63 in)										
Other actuators on special request																						
Actuator position		No symbol, without lever		1	Lever above terminal 1	2	Lever above terminal 2															

V4NC

Snap-action Microswitches

Subminiature

V4NC

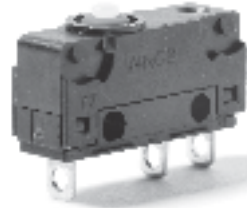
- Characteristics
- wide variety of levers
 - peg mounting option
 - pre-wired option
 - sealed (IP6K7)
 - solder and faston terminals
 - PCB terminals

Rating 250 VAC, 5 A

Dimensions (mm) 20 × 10.3 × 6.4

- Actuator
- plunger
 - plain levers
 - roller levers
 - simulated roller levers

Approvals none



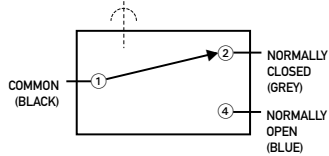
Preferred Range

Ordering Reference	Actuating Force (N)	Actuating Force (ozf)	Sealing	Operating pos. (mm)	Operating pos. (in)	Terminal	Circuit	Actuator	Contacts	Electrical rating
V4NCT7	1.7	6.114	No symbol	8.40	0.331	Solder	CO	Plunger	Ag	250 VAC, 5 A
V4NCT7A1	0.8	2.877	No symbol	10.85	0.427	Solder	CO	Plain lever	Ag	250 VAC, 5 A
V4NCT7AR	0.8	2.877	No symbol	16.00	0.630	Solder	CO	Roller lever	Ag	250 VAC, 5 A
V4NCS	2.5	8.992	Sealed IP6K7	8.40	0.331	Cable 500 mm	CO	Plunger	Ag	250 VAC, 5 A
V4NCSA1	0.9	3.237	Sealed IP6K7	10.80	0.425	Cable 500 mm	CO	Plain lever	Ag	250 VAC, 5 A
V4NCSAR	0.9	3.237	Sealed IP6K7	15.90	0.626	Cable 500 mm	CO	Roller lever	Ag	250 VAC, 5 A

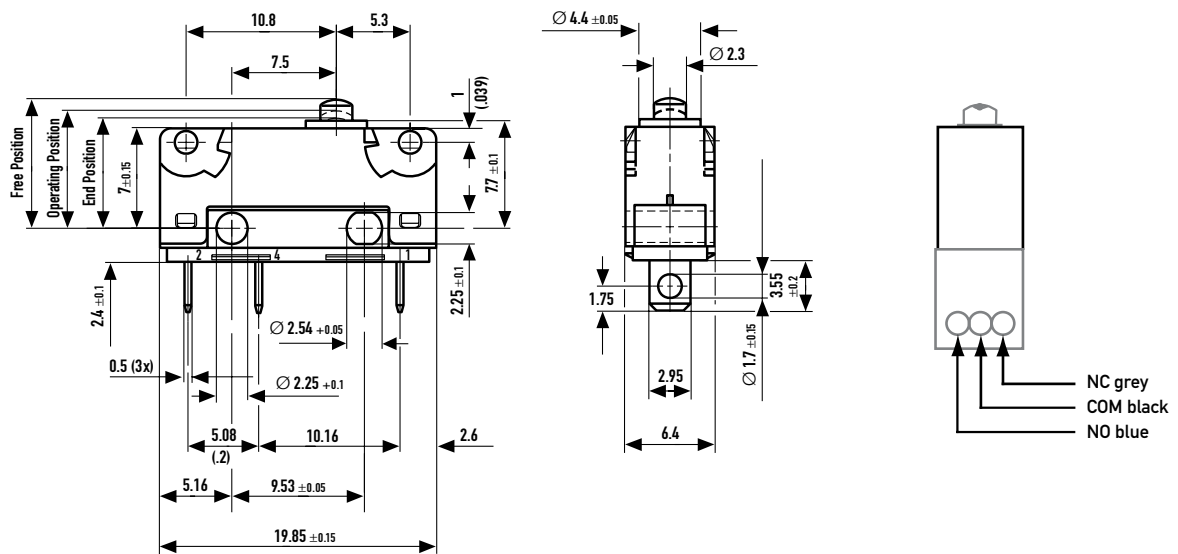
Specifications

Housing	Glass fibre reinforced Polyamide (PA 6.6)
Plunger	Polyacetal POM/(PA 4.6)
Mechanism	Snap-action coil spring mechanism with stainless steel spring
Functions	Change-over, normally closed or normally open
Contacts	Fine Silver, Gold plate on silver, Gold alloy on silver palladium (crosspoint)
Terminals	Gold flashed
Temperature range °C	-40°C to +85°C/120°C
Mechanical life	5 × 10 ⁶ cycles minimum (impact free actuation) for the cowl 3 × 10 ⁶
Protection	IP40, IP6K7 (depend on type), Flux-proof terminal entries (for all types)
Mounting	Side mounting (moulded mounting pegs on request)
Actuators	Plain lever, cam follower, roller lever, simulated roller (cam follower) lever
Accessories	Lug mounting frame, clip-on terminals cover, insulating sheet

Circuit diagram

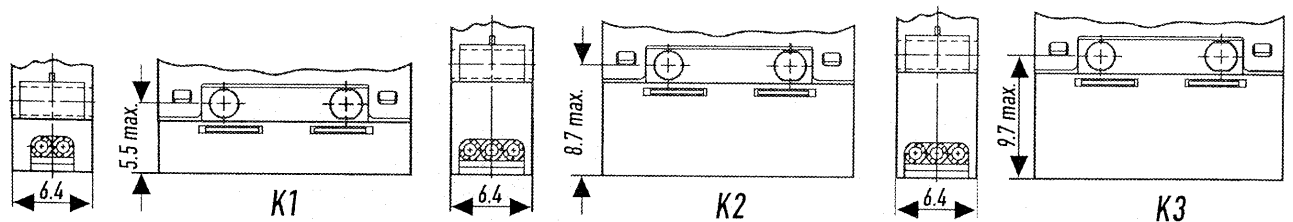


Dimensions



Prewired version with cable box

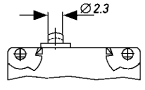
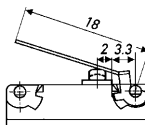
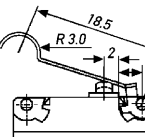
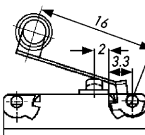
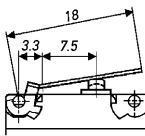
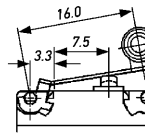
For type coding key please contact Saia-Burgess



Standard cable FLRY 0.5 mm² with max. outside diameter 1.8 mm
Standard cable box is K2

V4NC

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential Maximum	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)
 Plunger	V4NC..	1.7	6,114	0.3	1,079	9.2	0,362	8.4 ± 0.3	0,331 ± 0.012	0.1	0,004
	V4NCE..	1.7	6,114	0.3	1,079	9.7	0,382	8.9 ± 0.3	0,35 ± 0.012	0.1	0,004
	V4NCS..	2.5	8,992	0.5	1,798	9.2	0,362	8.4 ± 0.3	0,331 ± 0.012	0.1	0,004
	V4NCSE..	2.5	8,992	0.5	1,798	9.7	0,382	8.9 ± 0.3	0,35 ± 0.012	0.1	0,004
 A1 Lever	V4NC..	0.8	2,877	0.07	0,251	13.4	0,527	10.85 ± 1.3	0,427 ± 0.051	0.4	0,016
	V4NCE..	0.8	2,877	0.07	0,251	14.8	0,582	12.4 ± 1.3	0,488 ± 0.051	0.4	0,016
	V4NCS..	0.9	3,237	0.1	0,359	13.4	0,527	10.8 ± 1.3	0,425 ± 0.051	0.4	0,016
	V4NCSE..	0.9	3,237	0.1	0,359	14.8	0,582	12.4 ± 1.3	0,488 ± 0.051	0.4	0,016
Width of lever 4.0mm/0.16 in											
 AC Lever	V4NC..	0.8	2,877	0.07	0,251	16.1	0,634	13.5 ± 1.3	0,531 ± 0.051	0.4	0,016
	V4NCE..	0.8	2,877	0.07	0,251	17.6	0,693	15.1 ± 1.3	0,594 ± 0.051	0.4	0,016
	V4NCS..	0.9	3,237	0.1	0,359	16.1	0,634	13.4 ± 1.3	0,527 ± 0.051	0.4	0,016
	V4NCSE..	0.9	3,237	0.1	0,359	17.6	0,693	15.1 ± 1.3	0,594 ± 0.051	0.4	0,016
Width of lever 4.0mm/0.16 in											
 AR Lever	V4NC..	0.8	2,877	0.07	0,251	18.1	0,712	16 ± 1.2	0,63 ± 0.047	0.4	0,016
	V4NCE..	0.8	2,877	0.07	0,251	19.2	0,756	17.3 ± 1.2	0,681 ± 0.047	0.4	0,016
	V4NCS..	0.9	3,237	0.1	0,359	18.1	0,712	15.9 ± 1.2	0,626 ± 0.047	0.4	0,016
	V4NCSE..	0.9	3,237	0.1	0,359	19.2	0,756	17.3 ± 1.2	0,681 ± 0.047	0.4	0,016
Width of lever 4.0mm/0.16 in											
 A10 Lever	V4NC..	1.3	4,676	0.13	0,467	10.7	0,421	9.4 ± 0.7	0,37 ± 0.027	0.2	0,008
	V4NCE..	1.3	4,676	0.13	0,467	11.5	0,453	10.2 ± 0.7	0,401 ± 0.027	0.2	0,008
	V4NCS..	1.8	6,474	0.2	0,719	10.7	0,421	9.3 ± 0.7	0,366 ± 0.027	0.2	0,008
	V4NCSE..	1.8	6,474	0.2	0,719	11.5	0,453	10.1 ± 0.7	0,397 ± 0.027	0.2	0,008
Width of lever 4.0mm/0.16 in											
 AR0 Lever	V4NC..	1.3	4,676	0.13	0,467	15.8	0,622	14.7 ± 0.6	0,579 ± 0.023	0.2	0,008
	V4NCE..	1.3	4,676	0.13	0,467	16.5	0,649	15.4 ± 0.6	0,606 ± 0.023	0.2	0,008
	V4NCS..	1.8	6,474	0.2	0,719	15.8	0,622	14.7 ± 0.6	0,579 ± 0.023	0.2	0,008
	V4NCSE..	1.8	6,474	0.2	0,719	16.5	0,649	15.4 ± 0.6	0,606 ± 0.023	0.2	0,008
Width of lever 4.0mm/0.16 in											

Operating characteristics shown above are specified from mounting hole centres.

Over travel: Flush with case. (7.8 mm min) The case should not be used as an end stop.

Type coding key for standard products

Basic type	V4NC	Example: V4NC	E	T7	C2	A1	0	G
Actuating Force	No symbol, standard force							
Type of sealing	No symbol, unsealed, standard travel							
	E	Unsealed with extended overtravel (0.5 mm)						
	S	Sealed IP6K7 standard travel						
	B	Sealed IP6K7 with extended overtravel (0.5 mm)						
Terminals	No symbol, pre-wired 500 mm with cable box (V4NCS/B only)							
	T7	Solder 2.95 × 0.5 × 3.55 long						
	T8	PCB 0.8 × 0.5 × 4.0 long						
	T9	Faston 2.8 × 0.5 × 9.5 long						
	T81	Formed PCB 0.8 × 0.5 × 3.8 long						
	T82	Formed PCB 0.8 × 0.5 × 3.8 long						
	T84	Short PCB 0.8 × 0.5 × 2.0 long						
	T85	Long PCB 0.8 × 0.5 × 6.85 long						
	T11	Welding/solder 2.95 × 0.5 × 3.55 long						
Circuit	No symbol, change-over							
	C2	Normally closed						
	C4	Normally open						
Actuators	No symbol, without lever							
	A1	Plain lever 18.0 mm						
	A2	Plain lever 25.0 mm						
	A3	Plain lever 32.0 mm						
	A7	Plain lever 60.0 mm						
	AC	Cam follower lever 18.5 mm (AC1)						
	AR	Roller lever 16.0 mm (AR1)						
	AP	Roller lever 17.9 mm (AR2)						
	PB	Push Button (see specification PBA4/QA4)						
	QA	Push Button (see specification PBA4/QA4)						
	Other actuators on special request							
Actuator Position	No symbol, without lever, or lever fitted at the end nearest to the Plunger							
	0	With lever fitted at end opposite to plunger						
Contact Material	No symbol, Ag							
	G	Gold plate on silver (GP)						
	X	Gold alloy on silver palladium crosspoint (AUX)						
	Other contact materials on special request							
Special Features	/	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.					

V4N

Snap-action Microswitches

Subminiature

V4N

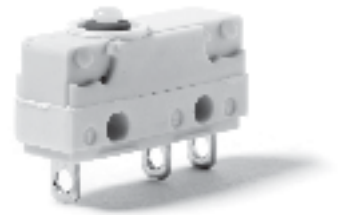
Characteristics ■ sealed (IP67)
 ■ solder, 2.8 mm faston and PCB terminals
 ■ pre-wired option

Rating 250 VAC, 5 A

Dimensions (mm) 20 × 10.3 × 6.4

Actuator ■ plunger
 ■ plain levers
 ■ roller levers
 ■ simulated roller lever/cam follower

Approvals UL, CSA, ENEC



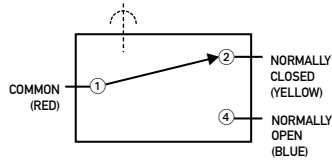
Preferred Range

Ordering Reference	Actuating Force		Sealing	Operating pos.		Terminal	Circuit	Actuator	Contacts	Electrical rating
	(N)	(ozf)		(mm)	(in)					
V4NT7UL	1.40	5.0	IP40	8.40	0.33	Solder	CO	Plain plunger	Ag	250 VAC, 5 A
V4NST7UL	2.50	9.0	IP67	8.40	0.33	Solder	CO	Plain plunger	Ag	250 VAC, 5 A
V4NSUL	2.50	9.0	IP67	8.40	0.33	Pre-wired	CO	Plain plunger	Ag	250 VAC, 5 A
V4NT7Y1UL	0.50	1.8	IP40	10.7	0.42	Solder	CO	Straight lever	Ag	250 VAC, 5 A
V4NST7Y1UL	0.90	3.2	IP67	10.6	0.42	Solder	CO	Straight lever	Ag	250 VAC, 5 A
V4NSY1UL	0.90	3.2	IP67	10.6	0.42	Pre-wired	CO	Straight lever	Ag	250 VAC, 5 A
V4NT7YRUL	0.50	1.8	IP40	15.7	0.62	Solder	CO	Roller lever	Ag	250 VAC, 5 A
V4NST7YRUL	0.90	3.2	IP67	15.6	0.62	Solder	CO	Roller lever	Ag	250 VAC, 5 A
V4NSYRUL	0.90	3.2	IP67	15.6	0.62	Pre-wired	CO	Roller lever	Ag	250 VAC, 5 A

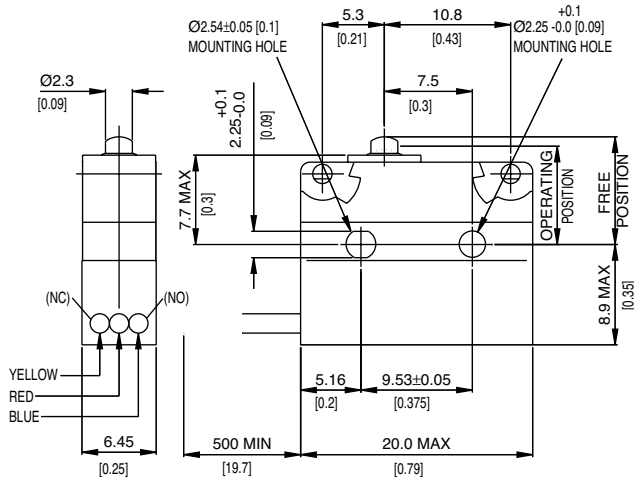
Specifications

Housing	Flame-retardant glass-fibre reinforced nylon
Plunger	Polyacetal (POM)
Mechanism	Snap-action coil spring mechanism with stainless steel spring
Functions	Change-over, normally closed or normally open
Contacts	Silver
Terminals	Gold flashed
Temperature range °C	-40°C to +85°C
Mechanical life	5 × 10 ⁶ cycles minimum (impact free actuation) for the cowl 3 × 10 ⁶
Protection	IP40 (V4N - enclosure), IP67 (V4NS - enclosure)
Mounting	Side mounting
Actuators	Plain lever, cam follower, Roller lever
Accessories	Insulating sheet - N04619, Clip-on terminal cover - TC102, Long overtravel actuator - QA4

Circuit diagram



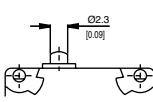
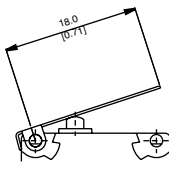
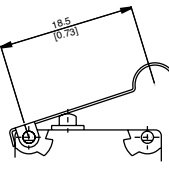
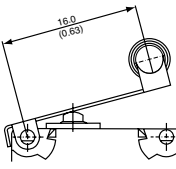
Dimensions



Recommended maximum electrical ratings

	Voltage (max)	Load (A)	Inductive load (A)	Approval
V4NT7UL/ V4NST7UL	250 VAC	5 (0.75 pf)	2	UL 1054/CSA 22.2 No. 55 - 6,000 operations - 65°C EN61058-1, T85, 10,000 operations
	250 VAC	5	2	
	0 - 15 VDC	5	3	
	15 - 30 VDC	5	3	General rating - 50,000 operations (85°C) General rating - 50,000 operations (85°C)
V4NSUL	250 VAC	3 (0.75 pf)	2	UL 1054/CSA 22.2 No. 55 - 6,000 operations - 65°C EN61058-1, T85, 10,000 operations
	250 VAC	5	2	
	0 - 15 VDC	3	3	
	15 - 30 VDC	3	3	

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential Maximum	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Plunger 	V4NT7UL	1,4	5,00	0,28	1,00	9,2	0,36	8,4 ± 0,3	0,33 ± 0,012	0,1	0,004
	V4NST7UL	2,5	9,00	0,30	1,00	9,2	0,36	8,4 ± 0,3	0,33 ± 0,012	0,1	0,004
	V4NSUL	2,5	9,00	0,3	1,00	9,2	0,36	8,4 ± 0,3	0,33 ± 0,012	0,1	0,004
Y1 lever 	V4NT7Y1UL	0,5	1,80	0,07	0,25	13,2	0,52	10,7 ± 1,0	0,42 ± 0,04	0,4	0,016
	V4NST7Y1UL	0,9	3,20	0,07	0,25	13,2	0,52	10,6 ± 1,2	0,42 ± 0,05	0,4	0,016
	V4NSY1UL	0,9	3,20	0,07	0,25	13,2	0,52	10,6 ± 1,2	0,42 ± 0,05	0,4	0,016
Width of lever 4.0 mm/0.16 in											
YC lever 	V4NT7YCUL	0,5	1,80	0,07	0,25	17,8	0,70	15,7 ± 1,0	0,62 ± 0,04	0,4	0,016
	V4NST7YCUL	0,9	3,20	0,07	0,25	17,8	0,70	15,6 ± 1,2	0,61 ± 0,05	0,4	0,016
	V4NSYCUL	0,9	3,20	0,07	0,25	17,8	0,70	15,6 ± 1,2	0,61 ± 0,05	0,4	0,016
Width of lever 4.0 mm/0.16 in											
YR lever 	V4NT7YRUL	0,5	1,80	0,07	0,25	17,8	0,70	15,7 ± 1,0	0,62 ± 0,04	0,4	0,016
	V4NST7YRUL	0,9	3,20	0,07	0,25	17,8	0,70	15,6 ± 1,2	0,61 ± 0,05	0,4	0,016
	V4NSYRUL	0,9	3,20	0,07	0,25	17,8	0,70	15,6 ± 1,2	0,61 ± 0,05	0,4	0,016
Width of lever 4.0 mm/0.16 in											

Over travel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic type	V4N	Example: V4N	E	T6	C2	Y1	0	G	UL
Type of sealing/ Overtravel	No symbol, unsealed, standard travel								
	E	Unsealed with extended overtravel (0.5 mm)							
	S	Sealed IP67 standard travel							
	B	Sealed IP67 with extended overtravel (0.5 mm)							
Terminals	No symbol, pre-wired 500 mm with cable box K2 (V4NS/B only)								
	T6	Faston	2.03 × 0.5 × 6.6 long						
	T7	Solder	2.95 × 0.5 × 3.6 long						
	T8	PCB	0.8 × 0.5 × 4.0 long						
	T9	Faston	2.8 × 0.5 × 8.1 long						
	T81	Formed PCB	0.8 × 0.5 × 3.8 long						
	T82	Formed PCB	0.8 × 0.5 × 3.8 long						
	T83	Formed PCB	8.8 × 0.5 × Surface mount						
	T84	Short PCB	0.8 × 0.5 × 2.0 long						
	T85	Long PCB	0.8 × 0.5 × 6.85 long						
	T86	PCB	0.8 × 0.5 × 4.0 long (equi-spaced)						
	T11	Solder	2.95 × 0.5 × 3.6 long						
Circuit	No symbol, change-over								
	C2	Normally closed							
	C4	Normally open							
Actuators	No symbol, without lever								
	Y1	Plain lever	18.0 mm						
	Y2	Plain lever	25.0 mm						
	Y3	Plain lever	32.0 mm						
	YC	Cam follower lever	18.5 mm						
	YR	Roller lever	16.0 mm						
	PB	Push Button	(see specification PBA4/QA4)						
	QA	Push Button	(see specification PBA4/QA4)						
	Other actuators on special request								
Actuator Position	No symbol, without lever, or lever fitted at the end nearest to the Plunger								
	0	With lever fitted at end opposite to plunger							
Contact Material	No symbol, Fine silver								
	G	Gold plate on silver							
	X	Gold alloy on silver palladium crosspoint							
Approvals	No symbol, without approval								
	UL	UL, CSA and ENEC approval							
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.								

V4L

Snap-action Microswitches

Subminiature

V4L

Characteristics

- long overtravel of 2.2 mm minimum
- sealed to (IP6K7) option
- pre-wired option
- solder terminals

Rating 250 VAC, 5 A

Dimensions (mm) 20 × 11 × 6.4

Actuator

- plunger
- plain lever
- ice break lever

Approvals ENEC, UL, CSA



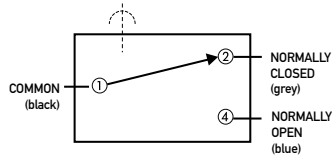
Preferred Range

Ordering Reference	Actuating Force (N) (ozf)		Sealing	Operating pos. (mm)	Terminal	Circuit	Actuator	Contacts	Electrical rating
V4LS	2.5	9.0	IP6K7	11,7 ± 0,4	Cable 500 mm	CO	Plunger	Ag	250 VAC, 5 A
V4LSA1	2.5	9.0	IP6K7	14,5 ± 0,8	Cable 500 mm	CO	Plain lever	Ag	250 VAC, 5 A
V4LSA2	2.0		IP6K7	16,5 ± 1,0	Cable 500 mm	CO	Plain lever	Ag	250 VAC, 5 A
V4LST7	2.5	9.0	IP6K7	11,7 ± 0,4	Solder	CO	Plunger	Ag	250 VAC, 5 A
V4LST7A1	2.5		IP6K7	14,5 ± 0,8	Solder	CO	Plain lever	Ag	250 VAC, 5 A
V4LST7A2	2.0		IP6K7	14,6 ± 1,0	Solder	CO	Plain lever	Ag	250 VAC, 5 A
V4LT7	2.4	8.6	no symbol	11,7 ± 0,4	Solder	CO	Plunger	Ag	250 VAC, 5 A

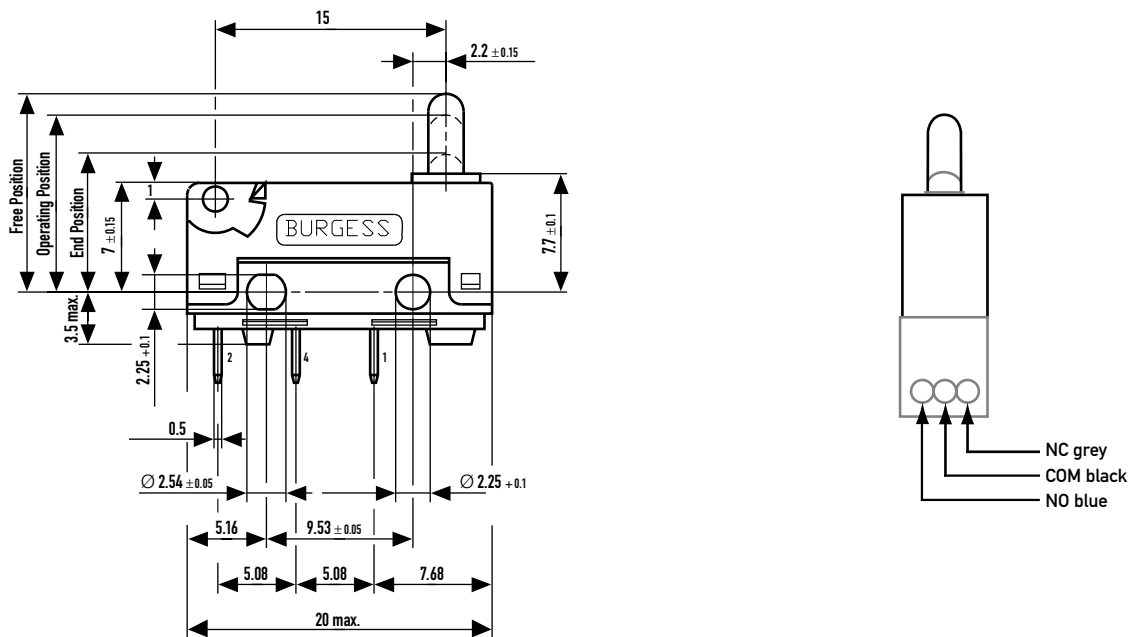
Specifications

Housing	Glass fibre reinforced polyamide (PA 6.6)
Plunger	Polyacetal (POM)
Mechanism	Snap-action coil spring mechanism with stainless steel spring. Change-over, normally closed or normally open
Contact carrier	Brass. Moving contact beryllium-copper
Contacts	Fine silver or gold crosspoint
Terminals	V4L – solder tags V4LS – PVC covered leads 0.5 m long
Temperature range °C	-40°C to +85°C
Mechanical life	V4L 2×10^6 cycles/min., V4LS 2×10^5 cycles/min. (impact free actuation)
Protection	V4L series IP40, V4LS series IP6K7, with encapsulated terminals
Mounting	Side mounting to a flat surface
Actuators	Plain lever, Ice break lever
Cowl	Silicon elastomer

Circuit diagram



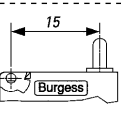
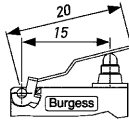
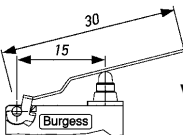
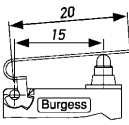
Dimensions



Recommended maximum electrical ratings

Voltage (VAC)	Resistive load (A) (Ag Contact)	Incandescent lamp load (A) (Ni1 Contact)	Inductive load (A) (Ag Contact)	Voltage (VDC) up to	Resistive load (A) (Ag Contact)	Incandescent lamp load (A) (Ni1 Contact)	Inductive load (A) (Ag Contact)
125	5	2	2	30	5	2	3
250	5	2	2	50	1	0.4	1
				75	0.75	0.3	0.75
				125	0.5	0.2	0.03
				250	0.25	0.1	0.03

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential Maximum		Total overtravel Position Minimum		Overtravel Minimum	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Plunger 	V4LT7	2,4	8,60	0,4	1,44	12,9	0,507	11,7 ± 0,4	0,46 ± 0,012	0,9	0,023	9,2	0,36	2,2	0,09
	V4LST7	2,5	9,00	0,5	1,78	12,9	0,507	11,7 ± 0,4	0,46 ± 0,012	0,9	0,023	9,2	0,36	2,2	0,09
A1 Lever 	V4L...	2,4	8,60	0,4	1,44	14,5	0,57	12,6 ± 0,8	0,59 ± 0,03	1,0	0,04	9,6	0,38	2,2	0,09
	V4LS...	2,5	9,00	0,5	1,78	14,5	0,57	12,6 ± 0,8	0,59 ± 0,03	1,0	0,04	9,6	0,38	2,2	0,09
Width of lever 4.0 mm/0.16 in															
A2 Lever 	V4L...	1,5	5,70	0,3	1,08	16,5	0,65	13,5 ± 1,0	0,53 ± 0,04	1,3	0,05	9,6	0,38	2,9	1,1
	V4LS...	2	7,20	0,3	1,08	16,5	0,65	13,5 ± 1,0	0,53 ± 0,04	1,3	0,05	9,6	0,38	2,9	1,1
Width of lever 4.0 mm/0.16 in															
F Lever 	V4L...	For positions and forces of this actuator please contact Saia-Burgess													
	V4LS...														
Width of lever 4.0 mm/0.16 in															

Type coding key for standard products

Basic type	Example: V4L					
	S	T7	C2	A1	G	UL
Type of sealing	No symbol, unsealed Sealed IP6K7					
Terminals	No symbol, pre-wired 500 mm with cable FLRY 0.5 mm ² and cable box (V4LS only) T7 Solder 2.95 × 0.5 × 3.55 long T8 PCB 0.8 × 0.5 × 4.0 long					
Circuit	No symbol, change over C2 Normally closed C4 Normally open					
Actuators	No symbol, without lever A1 Plain lever 20.0 mm, fitted at the end opposite to plunger A2 Plain lever 30.0 mm, fitted at the end opposite to plunger F Special lever F type 20.0 mm, fitted at the end opposite to plunger					
Contact Material	No symbol, Ag G Gold plate on silver (GP) X Gold alloy on silver palladium crosspoint (AUX) Other contact materials on special request					
Approvals	No symbol, without approval UL UL and CSA approval EN ENEC approval only UN UL, CSA and ENEC approval					
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.					



Switches

Snap-action Microswitches, Miniature	Type	Preferred Products	Preferred Products	Page
	XG	XGG2-88Z1 XGG2-88-J23Z1 XGG2-88-J26Z1 XGG2-88-J27Z1 XGG2-88-S20Z1 XGG2-88-S21Z1 XGG3-88Z1 XGG6-88Z1 XGC2-88Z1 XGC2-88-J23Z1 XGC2-88-S20Z1 XGC6-88Z1	XGK2-88Z1 XGK2-88-J26Z1 XGK2-88-S21Z1 XGK3-88Z1 XGK6-88Z1 XG02-88Z1 XG02-88-J27Z1 XG02-88-S20Z1 XG06-88Z1	66
	390	393/40/120 393/40/350		70
	X3	X3M302K2KA X3M302K2KAJ32 X3M302K2KAJ62 X3M302K2KAT02 X3M303K2KA X3M306K2KA	X3C302K2LB X3C302K2LBJ32 X3C303K2LB X3C306K2LB X3L302K6DD X3L303K6DD	74
	G3	G3M1T1RULAU G3M1T1PULAU G3M1T1RUL G3M1T1PUL G3M1T2RUL G3M1T2PUL	G3M1T3RUL G3M1T3PUL G3M1T4RUL G3M1T4PUL G3G4T1RUL G3G4T1PUL	78
	340	343/40/75 343/120/350		81
Snap-Action Microswitch, Torque	600	BB1/R-51		85
Microswitch Push Button, Momentary	QA5/PBA4	V4NCT7		87
Push Button Snap-action, Momentary	V3Q	V3Q1UL V3SQR1UL V3SQ1UL 2V3Q1UL V3SQ1UL 2V3Q2		91
	C0911	C0911KBRC0911KBB		94
Latching	ZB5	383ZB51RB	383ZB51GB	97

XG

Snap-action Microswitches

Miniature

XG

Characteristics ■ wide range of forces and ratings
 ■ long mechanical and electrical life
 ■ solder, faston and PCB terminals

Rating 250 VAC, 26 A max.

Dimensions (mm) 27.8 × 15.9 × 10.3

Actuator ■ plunger
 ■ plain levers
 ■ roller levers
 ■ simulated roller levers

Approvals ENEC, UL, cUL, CSA



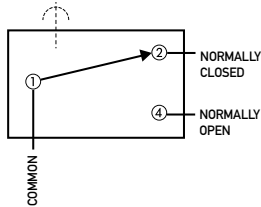
Preferred Range

Ordering Reference	Actuating Force		Operating pos.		Terminal	Circuit	Actuator	Contacts	Electrical rating	
	(N)	(ozf)	(mm)	(in)					ENEC	UL/CSA
XGG2-88Z1	3.20	11.43	14.7	0.57	Faston	CO	Plunger	Ag / AgNi10	16(6) A	15 A
XGG2-88-J23Z1	1.40	5.03	14.9	0.59	Faston	CO	Plain lever	Ag / AgNi10	16(6) A	15 A
XGG2-88-J26Z1	0.91	3.27	14.5	0.57	Faston	CO	Plain lever	Ag / AgNi10	16(6) A	15 A
XGG2-88-J27Z1	0.65	2.34	13.7	0.54	Faston	CO	Plain lever	Ag / AgNi10	16(6) A	15 A
XGG2-88-S20Z1	3.20	11.43	20.2	0.79	Faston	CO	Roller lever	Ag / AgNi10	16(6) A	15 A
XGG2-88-S21Z1	1.55	5.57	20.1	0.79	Faston	CO	Roller lever	Ag / AgNi10	16(6) A	15 A
XGG3-88Z1	3.20	11.43	14.7	0.57	Solder	CO	Plunger	Ag / AgNi10	16(6) A	15 A
XGG6-88Z1	3.20	11.43	14.7	0.57	Faston	CO	Plunger	Ag / AgNi10	16(6) A	15 A
XGC2-88Z1	0.80	2.86	14.7	0.57	Faston	CO	Plunger	Ag / AgNi10	12(6) A	10 A
XGC2-88-J23Z1	0.35	1.26	15.0	0.59	Faston	CO	Plain lever	Ag / AgNi10	12(6) A	10 A
XGC2-88-S20Z1	0.80	2.86	20.2	0.79	Faston	CO	Roller lever	Ag / AgNi10	12(6) A	10 A
XGC6-88Z1	0.80	2.86	14.7	0.57	Faston	CO	Plunger	Ag / AgNi10	12(6) A	10 A
XGK2-88Z1	1.50	5.36	14.7	0.57	Faston	CO	Plunger	Ag / AgNi10	12(6) A	12 A
XGK2-88-J26Z1	0.43	1.55	14.7	0.57	Faston	CO	Plain lever	Ag / AgNi10	12(6) A	12 A
XGK2-88-S21Z1	0.71	2.55	20.2	0.80	Faston	CO	Roller lever	Ag / AgNi10	12(6) A	12 A
XGK3-88Z1	1.50	5.36	14.7	0.57	Solder	CO	Plunger	Ag / AgNi10	12(6) A	12 A
XGK6-88Z1	1.50	5.36	14.7	0.57	Faston	CO	Plunger	Ag / AgNi10	12(6) A	12 A
XG02-88Z1	1.20	4.29	14.5	0.57	Faston	CO	Plunger	Ag / AgNi10	16(6) A	15 A
XG02-88-J27Z1	0.25	0.90	13.6	0.54	Faston	CO	Plain lever	Ag / AgNi10	16(6) A	15 A
XG02-88-S20Z1	1.20	4.29	20.1	0.79	Faston	CO	Roller lever	Ag / AgNi10	16(6) A	15 A
XG06-88Z1	1.20	4.29	14.5	0.57	Faston	CO	Plunger	Ag / AgNi10	16(6) A	15 A

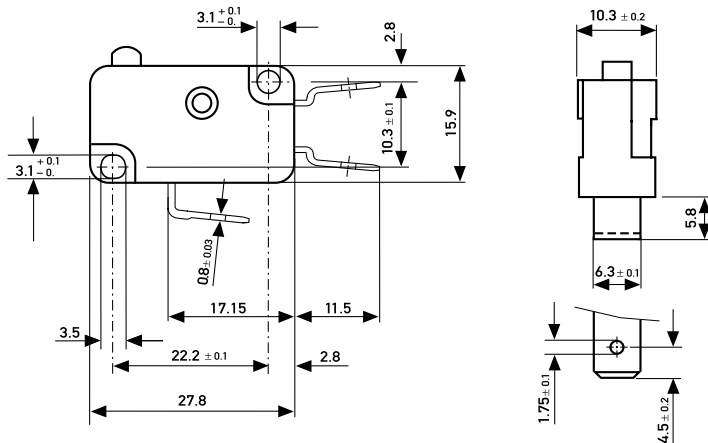
Specifications

Housing	Melamine-Formaldehyd. Thermosetting
Plunger	POM for T85, PBT for T125, PPS for T150
Mechanism	Snap-action, single pole beryllium bronze blade mechanisme with wiping contacts
Functions	Change-over, normally-closed (except XGG and XGK) or normally-open
Contacts	Fine silver (Ag), silver nickel (AgNi10), gold-plated (Au), silver cadmium oxide (AgCdO)
Terminals	Solder, faston, screw, PCB and side mounting PCB terminals. RAST 5 terminals (5.0 mm pitch)
Temperature range °C	-40° C to +150° C
Mechanical life	2.5 · 10 ⁵ cycles minimum, 50 · 10 ⁶ cycles maximum (Actuation: sinusoidal and maximum up to 80% of the overtravel)
Protection	Enclosure IP40
Mounting	Side mounting via mounting holes
Actuators	Stainless steel

Circuit diagram



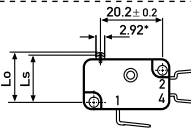
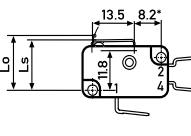
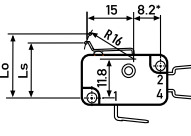
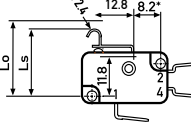
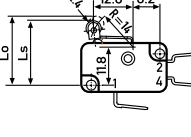
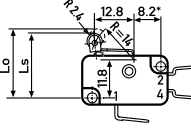
Dimensions



Recommended maximum electrical ratings

	Voltage (VAC)	Approvals			Voltage (VAC)	Approvals					
		ENEC	UL	(VAC)		ENEC	UL	(VAC)			
XGB..-88	250	16 (6)	5E4	15 A	125/250	XGT..-86	250	26 (10)	25E3	25A	125/250
XGA..-88	250	16 (6)	5E4	15 A	125/250	XGD..-86	250	22 (6)	5E4	21A	125/250
XGM..-88	250	16 (6)	5E4	15 A	125/250	XGA..-86	250	20 (8)	5E4	15A	125/250
XGO..-88	250	16 (6)	5E4	15 A	125/250	XGM..-86	250	20 (8)	5E4	15A	125/250
XGB..-88	250	12 (6)	5E4	12 A	125/250	XGO..-86	250	20 (8)	5E4	15A	125/250
XGC..-88	250	12 (6)	5E4	10 A	125/250	XGA..-86	400	10 (6)	5E4	-	-
XGH..-88	250	12 (6)	5E4	10 A	125/250	XGG..-86	400	10 (6)	5E4	-	-
XGK..-88	250	12 (6)	5E4	12 A	125/250	XGM..-86	400	10 (6)	5E4	-	-
XG....-88	400	3 (2)	5E4			XGO..-86	400	10 (6)	5E4	-	-

Operating Characteristics

Actuator	Reference	Actuating Force		Release Force		Free Position Maximum		Operating Position		Movement Differential Maximum		Total travelled position		
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	
	XGG..	3.2	11.43	0.4	1.43	15.75	0.62	14.7	0.57	+0.2 -0.4 +0.007 -0.015	0.35	0.013	13.2	0.519
	XGA..	3.2	11.43	0.6	2.14	15.75	0.62	14.7	0.57		0.15	0.006	13.2	0.519
	XGM..	2	7.14	0.5	1.79	15.6	0.61	14.5	0.57		0.35	0.013	13.7	0.539
	XGO..	1.2	4.29	0.1	0.36	15.6	0.61	14.5	0.57		0.35	0.013	13.7	0.539
	XGK..	1.5	5.36	0.2	0.71	15.75	0.62	14.7	0.57		0.35	0.013	13.2	0.519
	XGB..	1.5	5.36	0.3	1.07	15.75	0.62	14.7	0.57		0.15	0.006	13.2	0.519
	XGC..	0.8	2.86	0.1	0.36	15.75	0.62	14.7	0.57		0.15	0.006	13.2	0.519
	XGH..	0.45	1.61	0.05	0.18	15.6	0.61	14.5	0.57		0.35	0.013	13.7	0.539
	XGT..	3.2	11.43	0.6	2.14	15.75	0.62	14.7	0.57		0.15	0.006	13.2	0.519
	XGD..	1.7	6.07	0.15	0.54	15.75	0.62	14.7	0.57		0.15	0.006	13.2	0.519
	XGG..	3.2	11.43	0.36	1.29	16.5	0.64	15.1 ± 0.5	0.59 ± 0.019	0.4	0.015	14	0.551	
	XGA..	3.2	11.43	0.54	1.93	16.5	0.64	15.1 ± 0.5	0.59 ± 0.019	0.2	0.007	14	0.551	
	XGM..	2	7.14	0.45	1.61	16.5	0.64	15 ± 0.5	0.59 ± 0.019	0.4	0.015	14.4	0.566	
	XGO..	1.2	4.29	0.09	0.34	16.5	0.64	15 ± 0.5	0.59 ± 0.019	0.4	0.015	14.4	0.566	
	XGK..	1.5	5.36	0.18	0.64	16.5	0.64	15.1 ± 0.5	0.59 ± 0.019	0.4	0.015	14	0.551	
	XGB..	1.5	5.36	0.27	0.96	16.5	0.64	15.1 ± 0.5	0.59 ± 0.019	0.2	0.007	14	0.551	
	XGC..	0.8	2.86	0.09	0.32	16.5	0.64	15.1 ± 0.5	0.59 ± 0.019	0.2	0.007	14	0.551	
	XGH..	0.45	1.61	0.04	0.14	16.5	0.64	15 ± 0.5	0.59 ± 0.019	0.4	0.015	14.4	0.566	
	Width of lever 7 mm/0.28 in													
		XGG..	2.6	9.29	0.32	1.14	19.2	0.75	17.5 ± 0.7	0.68 ± 0.027	0.45	0.017	16.4	0.645
XGA..		2.6	9.29	0.48	1.71	19.2	0.75	17.5 ± 0.7	0.68 ± 0.027	0.2	0.007	16.4	0.645	
XGM..		1.65	5.89	0.4	1.43	19.2	0.75	17.3 ± 0.7	0.68 ± 0.027	0.45	0.017	16.9	0.665	
XGO..		1	3.57	0.08	0.29	19.2	0.75	17.3 ± 0.7	0.68 ± 0.027	0.45	0.017	16.9	0.665	
XGK..		1.25	4.46	0.16	0.57	19.2	0.75	17.5 ± 0.7	0.68 ± 0.027	0.45	0.017	16.4	0.645	
XGB..		1.25	4.46	0.24	0.86	19.2	0.75	17.5 ± 0.7	0.68 ± 0.027	0.2	0.007	16.4	0.645	
XGC..		0.65	2.32	0.08	1.29	19.2	0.75	17.5 ± 0.7	0.68 ± 0.027	0.2	0.007	16.4	0.645	
XGH..		1.37	1.32	0.04	0.14	19.2	0.75	17.3 ± 0.7	0.68 ± 0.027	0.45	0.017	16.9	0.665	
Width of lever 7 mm/0.28 in														
		XGG..	3.2	11.43	0.38	1.36	21.8	0.85	20.5 ± 0.6	0.81 ± 0.023	0.4	0.015	19.5	0.767
	XGA..	3.2	11.43	0.85	3.04	21.8	0.85	20.5 ± 0.6	0.81 ± 0.023	0.2	0.007	19.5	0.767	
	XGM..	2	7.14	0.48	1.71	21.8	0.85	20.3 ± 0.6	0.8 ± 0.023	0.4	0.015	19.8	0.779	
	XGO..	1.2	4.29	0.09	0.32	21.8	0.85	20.1 ± 0.6	0.79 ± 0.023	0.4	0.015	19.8	0.779	
	XGK..	1.5	5.36	0.19	0.68	21.8	0.85	20.5 ± 0.6	0.81 ± 0.023	0.4	0.015	19.5	0.767	
	XGB..	1.5	5.36	0.29	1.04	21.8	0.85	20.5 ± 0.6	0.81 ± 0.023	0.2	0.007	19.5	0.767	
	XGC..	0.8	2.86	0.09	0.32	21.8	0.85	20.5 ± 0.6	0.81 ± 0.023	0.2	0.007	19.5	0.767	
	XGH..	0.45	1.61	0.04	0.14	21.8	0.85	20.3 ± 0.6	0.8 ± 0.023	0.4	0.015	19.8	0.779	
	Width of lever 7 mm/0.28 in													
		XGG..	3.2	11.43	0.37	1.32	21.8	0.85	20.2 ± 0.7	0.79 ± 0.027	0.4	0.015	19.3	0.759
XGA..		3.2	11.43	0.56	2	21.8	0.85	20.2 ± 0.7	0.79 ± 0.027	0.2	0.007	19.3	0.759	
XGM..		2	7.14	0.47	1.68	21.8	0.85	20.1 ± 0.7	0.79 ± 0.027	0.4	0.015	19.7	0.775	
XGO..		1.2	4.29	0.09	0.32	21.8	0.85	20.1 ± 0.7	0.79 ± 0.027	0.4	0.015	19.7	0.775	
XGK..		1.5	5.36	0.18	0.64	21.8	0.85	20.2 ± 0.7	0.79 ± 0.027	0.4	0.015	19.3	0.759	
XGB..		1.5	5.36	0.28	1	21.8	0.85	20.2 ± 0.7	0.79 ± 0.027	0.2	0.007	19.3	0.759	
XGC..		0.8	2.86	0.09	0.32	21.8	0.85	20.2 ± 0.7	0.79 ± 0.027	0.2	0.007	19.3	0.759	
XGH..		0.45	1.61	0.04	0.14	21.8	0.85	20.1 ± 0.7	0.79 ± 0.027	0.4	0.015	19.7	0.775	
Width of roller 6.6 mm/0.26 in														
		XGG..	3.2	11.43	0.37	1.32	21.8	0.85	20.2 ± 0.7	0.79 ± 0.027	0.4	0.015	19.3	0.759
	XGA..	3.2	11.43	0.56	2	21.8	0.85	20.2 ± 0.7	0.79 ± 0.027	0.2	0.007	19.3	0.759	
	XGM..	2	7.14	0.05	1.68	21.8	0.85	20.1 ± 0.7	0.79 ± 0.027	0.4	0.015	19.7	0.775	
	XGO..	1.2	4.29	0.09	0.32	21.8	0.85	20.1 ± 0.7	0.79 ± 0.027	0.4	0.015	19.7	0.775	
	XGK..	1.5	5.36	0.18	0.64	21.8	0.85	20.2 ± 0.7	0.79 ± 0.027	0.4	0.015	19.3	0.759	
	XGB..	1.5	5.36	0.28	1	21.8	0.85	20.2 ± 0.7	0.79 ± 0.027	0.2	0.007	19.3	0.759	
	XGC..	0.8	2.86	0.09	0.32	21.8	0.85	20.2 ± 0.7	0.79 ± 0.027	0.2	0.007	19.3	0.759	
	XGH..	0.45	1.61	0.04	0.14	21.8	0.85	20.1 ± 0.7	0.79 ± 0.027	0.4	0.015	19.7	0.775	
	Width of roller 6.6 mm/0.26 in													

1) Lever distance 8.2 (0.32) for lever position -20, lever position (-J20, L20, S20, M20)
Lever distance 14.0 (0.55) for lever position -40, lever position (-J40, L40, S40, M40)

* For high temperature T125°C/T 150°C (ENEC, UL)

Type coding key for standard products

Basic type	XGG..	3.2 N	11.43 ozf	Example: XG	4	2	A	-88	J20	Z1
	XGA..	3.2 N	11.43 ozf							
	XGM..	2.0 N	7.14 ozf							
	XGO..	1.2 N	4.29 ozf							
	XGK..	1.5 N	5.36 ozf							
	XGB..	1.5 N	5.36 ozf							
	XGC..	0.8 N	2.86 ozf							
	XGH..	0.45 N	1.61 ozf							
	XGD..	1.7 N	6.07 ozf							
	XGT..	3.2 N	11.43 ozf							
Circuit	No symbol, change-over									
	4	Normally closed (NC)								
	5	Normally open (NO)								
Terminals	2	Faston	6.3 × 0.8							
	3	Solder	1.7 × 3.2							
	4	Faston	1 × 2.8 × 0.5 DIN							
	5	Faston	1 × 2.8 × 0.5							
	6	Faston	4.8 × 0.5							
	7	Screw								
	8	Faston	1 × 2.8 × 0.8 DIN							
	9	Faston	1 × 2.8 × 0.8							
	10	Faston	4.8 × 0.8							
	11	Faston	2 × 2.8 × 0.8							
	12	Short solder	∅ 2.3							
	13	Print bent (lid)								
	14	Print bent (base)								
	15	Rast 5	6.3 × 0.8							
	19	Short solder	∅ 1.7							
Other types of terminals are available on request										
Version	ENEC		UL		Number of operations at rated load					
	No symbol, T85		T90		Europe	UL				
A	T85		T90		50.000	6.000				
W	T150		T150		50.000	100.000				
AW	T150		T150		50.000	100.000				
B	T85		T90		10.000	6.000				
V	T125		T130		50.000	6.000				
AV	T125		T130		50.000	100.000				
C	T85		T90		25.000	6.000				
Contacts	-88	Ag / AgNi10								
	-81	Gold-plated 4 µm (Au) on Ag								
	-86	Ag / Ag CdO								
Actuators	No symbol, plunger									
	J20 ¹⁾	J40 ²⁾	Plain lever		13.5 mm					
	J22 ¹⁾	J42 ²⁾	Plain lever		24.0 mm					
	J23 ¹⁾	J43 ²⁾	Plain lever		27.8 mm					
	J27 ¹⁾	J47 ²⁾	Plain lever		60.0 mm					
	M20 ¹⁾	M40 ²⁾	Plain lever formed		14.7 mm					
	L20 ¹⁾	L40 ²⁾	Cam follower		12.8 mm					
	L21 ¹⁾	L41 ²⁾	Cam follower		26.2 mm					
	S20 ¹⁾	S40 ²⁾	Roller lever		12.8 mm					
	T20 ¹⁾	T40 ²⁾	Roller lever, 150° C version		12.8 mm					
Other actuators available on request										
¹⁾ Lever distance 8.2 (0.32) for lever position –.20, lever position (–J20, L20, S20, M20)										
²⁾ Lever distance 14.0 (0.55) for lever position –.40, lever position (–J40, L40, S40, M40)										
Approvals	No symbol, ENEC									
	Z1	UL, CSA								

390

Snap-action Microswitches

Miniature

390

Characteristics ■ wiping contacts, leaf spring mechanism
■ Rast 5 terminal option

Rating 250 VAC, 25 A max.

Dimensions 28.8 × 20.4 × 10.1

Actuator ■ plunger
■ plain levers
■ roller levers
■ moulded lever

Approvals ENEC, UL, CSA



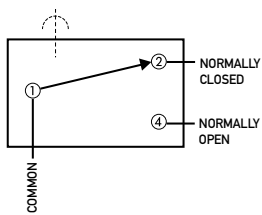
Popular Products

Ordering Reference	Actuating Force (g)	Operating pos. (mm)	Terminal	Contact Gap (mm)	Actuator	Contacts	Electrical rating ENEC	UL
393/40/120	120	14,4–15,17	6,35 × 0,8	1	Plunger	Ag	22 (4) A 250 VAC	22 A 1HP 125/250VAC
393/40/350	350	14,4–15,17	6,35 × 0,8	1	Plunger	Ag	20 (4) A 250 VAC	20 A 1HP 125/250 VAC

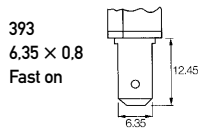
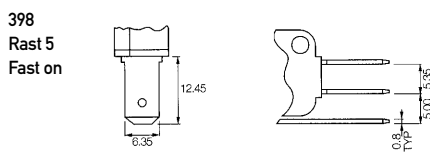
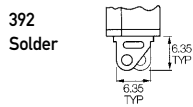
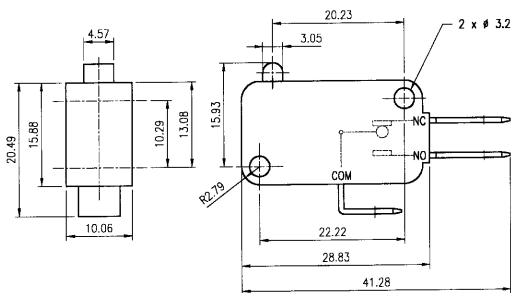
Specifications

Housing	Glass-filled flame retardant Nylon 6,6
Plunger	Glass-filled flame retardant Nylon 6,6
Mechanism	Snap action, single pole leaf spring mechanism
Functions	Change over, Normally open, Normally closed
Contacts	Silver
Terminals	Solder, Faston and Rast 5 terminals
Temperature range	-10°C to +85°C
Mechanical life	10 ⁷ cycles minimum (impact-free actuation)
Protection	IP40 (enclosure)
Mounting	Side mounting
Actuators	Plunger, plain lever, roller lever

Circuit diagram



Dimensions

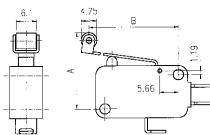
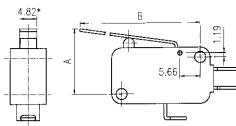


Recommended maximum electrical ratings A3 shown below

Versions	ENEC	UL
120 g	22 (4) A, 250 VAC, 50E3, T85	22 A 1HP 125/250 VAC T85
350 g (only for NO/NC)	25 (4) A, 250 VAC, 50E3, T85 20 (4) A, 250 VAC, 10E3, T85, CO	22 A 1HP 125/250 VAC T85 20A, 1HP 125/250 VAC

Operating Characteristics

Actuator	Reference	Actuating Force Maximum (g)	Release Force Minimum (g)	Free Position Maximum (mm)	Operating Position	Length (mm)	Movement Differential Maximum (mm)	Overtravel Minimum (mm)
Plunger	39-/40/120	120	40	15.93	14,4-15,17		0,25	1,32
	39-/120/350	350	100	15.93	14,4-15,17		0,25	1,32
Plain lever (Back position)	ZD0			16,99		22,56		
	ZD1			18,61		33,9		
	ZD2			25,8		84,43		
Roller lever	ZDS0			22,15		19,67		
	ZDS1			23,86		31,7		



Type coding key for standard products

Basic type	39						Example: 39	2/	40/	120	NO	ZD0
Terminal type	2	Solder										
	3	6,35 × 0,8 fast-on										
	8	6,35 × 0,8 Rast 5										
Contact gap	40	1 mm standard										
Operating force	120	120 g										
	350	350 g										
Circuit		No symbol, change-over										
	NO	Normally open										
	NC	Normally closed										
Actuator		No symbol, plunger										
	ZD0	Plain lever	22,5 mm									
	ZD1	Plain lever	33,9 mm									
	ZD2	Plain lever	84,4 mm									
	ZDS0	Roller lever	19,67 mm									
	ZDS1	Roller lever	31,7 mm									

X3

Snap-action Microswitches

Miniature

X3

Characteristics ■ 8 mm creepage and clearance distance to the actuator
■ long mechanical and electrical life
■ solder, faston and PCB terminal

Rating 250 VAC, 21 A max.

Dimensions (mm) 27,8 × 15,9 × 10,3

Actuator ■ plunger
■ straight lever
■ simulated roller levers
■ roller levers

Approvals UL, cUL, CSA, ENEC, CQC



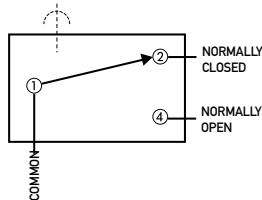
Preferred Range

Ordering Reference	Actuating Force (N)	(ozf)	Operating pos. (mm)	Terminal	Circuit	Actuator	Contacts	Electrical rating ENEC	UL/CSA
X3M302K2KA	1,60	5,72	14,7 +0.2/-0.4	Faston	CO	Plunger	Ag/AgNi10	16 (6) A	20.5 A
X3M302K2KAJ32	0,88	3,15	15 ± 1,0	Faston	CO	Plain lever	Ag/AgNi10	16 (6) A	20.5 A
X3M302K2KAJ62	0,57	2,04	14,8 ± 1,5	Faston	CO	Plain lever	Ag/AgNi10	16 (6) A	20.5 A
X3M302K2KAT02	2,00	7,15	20,2 ± 0,7	Solder	CO	Roller lever	Ag/AgNi10	16 (6) A	20.5 A
X3M303K2KA	1,60	5,72	14,7 +0.2/-0.4	Solder	CO	Plunger	Ag/AgNi10	16 (6) A	20.5 A
X3M306K2KA	1,60	5,72	14,7 +0.2/-0.4	Faston	CO	Plain lever	Ag/AgNi10	16 (6) A	20.5 A
X3C302K2LB	0,80	2,86	14,7 +0.2/-0.4	Faston	CO	Plunger	Ag/AgNi10	10 (3) A	12 A
X3C302K2LBJ32	0,35	1,25	15 ± 1,0	Faston	CO	Plain lever	Ag/AgNi10	10 (3) A	12 A
X3C303K2LB	0,80	2,86	14,7 +0.2/-0.4	Solder	CO	Plunger	Ag/AgNi10	10 (3) A	12 A
X3C306K2LB	0,80	2,86	14,7 +0.2/-0.4	Faston	CO	Plunger	Ag/AgNi10	10 (3) A	12 A
X3L302K6DD	1,50	5,36	14,7 +0.2/-0.4	Faston	CO	Plunger	Ag/AgCdO	21 (8) A	21 A
X3L303K6DD	1,50	5,36	14,7 +0.2/-0.4	Solder	CO	Plunger	Ag/AgCdO	21 (8) A	21 A

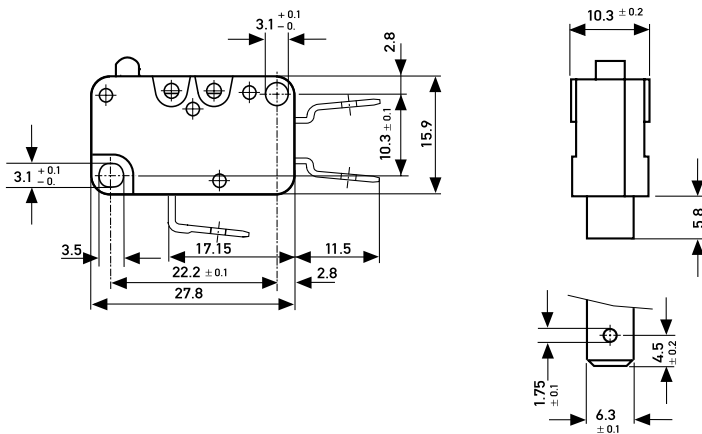
Specifications

Housing	Thermoplastic
Plunger	Thermoplastic
Mechanism	Snap-action, single pole beryllium bronze blade mechanism with wiping contacts
Contact carrier	Brass
Contacts	Fine silver (Ag), silver nickel (AgNi10), gold-plated (Au), silver cadmium oxide (AgCd0)
Terminals	Solder, Faston and RAST 5 terminals
Temperature range °C	Between -40°C and +125°C
Mechanical life	minimum cycles X3L: 10 ⁵ / X3M: 10 ⁶ /X3C: 2 · 10 ⁶ (Actuation: sinusoidal and maximum up to 80% of the overtravel)
Protection	Enclosure IP40
Mounting	Side mounting via mounting holes
Actuators	Stainless steel

Circuit diagram



Dimensions

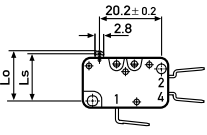
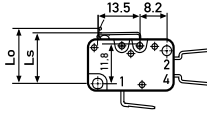
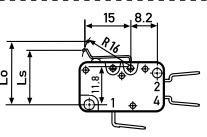
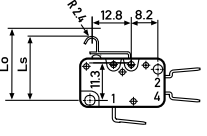
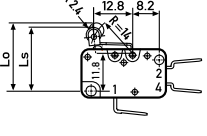


Recommended maximum electrical ratings

	Voltage (VAC)	Resistive load (A)	Motor load (A)	Approvals ENEC (A)	(VAC)	Approvals UL (A)	(VAC)	Motor load
X3M	250	16	6	16 (6)	5E4	20,5	250	1½ HP
X3C	250	10	3	10 (3)	5E4	20,5	125	½ HP
						12	250	½ HP
X3L	250	21	8	21 (8)	1E4	21	250	2 HP
						21	125	1 HP

Current breaking capacities in the tables refer to Ag/AgNi10 contacts with the exception of X3L Ag/AgCd0

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential		Full overtravel position			
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)		
 Plunger	X3C3	0.8	2.877	0.05	0.179	15.75	0.62	14.7	+0.2	0.578	+0.008	0.25	0.009	13.2	0.52
	X3M3	1.6	5.755	0.2	0.719	15.75	0.62	14.7	-0.4	0.578	-0.006	0.25	0.009	13.2	0.52
 J02 Lever	X3C3 ..	0.8	2.877	0.045	0.161	16.5	0.649	15.1 ± 0.5	0.59 ± 0.02	0.35	0.014	14	0.55		
	X3M3..	2	7.193	0.18	0.647	16.5	0.649	15.1 ± 0.5	0.59 ± 0.02	0.35	0.014	14	0.55		
Width of lever 7.0 mm/0.28 in															
 M02 Lever	X3C3 ..	0.5	1.798	0.04	0.143	19.2	0.755	17.5 ± 0.7	0.69 ± 0.028	0.35	0.014	16.4	0.65		
	X3M3..	1.65	5.934	0.16	0.575	19.2	0.755	17.5 ± 0.7	0.69 ± 0.028	0.35	0.014	16.4	0.65		
Width of lever 7.0 mm/0.28 in															
 L02 Lever	X3C3 ..	0.8	2.877	0.045	0.161	21.8	0.858	20.5 ± 0.6	0.81 ± 0.024	0.35	0.014	19.5	0.76		
	X3M3..	2	7.193	0.19	0.683	21.8	0.858	20.5 ± 0.6	0.81 ± 0.024	0.3	0.011	19.5	0.76		
Width of lever 7.0 mm/0.28 in															
 T02 Lever	X3C3 ..	0.8	2.877	0.045	0.161	21.8	0.858	20.2 ± 0.7	0.79 ± 0.028	0.35	0.014	19.3	0.76		
	X3M3..	2	7.193	0.19	0.683	21.8	0.858	20.2 ± 0.7	0.79 ± 0.028	0.35	0.014	19.3	0.76		
Width of roller 7.0 mm/0.28 in															

Type coding key for standard products

Basic type	X3	Microswitch according to DIN 41635, Design A	Example: X3	M	3	02	K	2	A	A	J0	2	AA
Operating force	M	Standard force 1											
	L	Standard force 2											
	C	Low force											
Circuit diagram	3	Change-over											
	4	Normally closed (NC)											
	5	Normally open (NO)											
Terminals	02	Plug terminal 6.3 × 0.8 mm	13	PCB-terminal, Formed to lid									
	03	Solder terminal	14	PCB-terminal, Formed to base									
	06	Plug terminal 4.8 × 0.5 mm	15	Plug terminal RAST 5 6.3 × 0.8 mm									
	10	Plug terminal 4.8 × 0.8 mm	16	Plug terminal RAST 5 4.8 × 0.8 mm									
	12	Solder terminal, short											
Body	K	PA66 GF25											
Contacts materials	2	Silver/AgNi10											
	6	AgCd0											
	8	Gold plated											
UL/C-UL ratings	A	20.5 A, 125/250 VAC 15 A, 125/250 VAC, 100'000 cy. 1½ HP, 250 VAC, ½ HP, 125 VAC	M	6 A, 125/250 VAC ¼ HP, 250 VAC, ½ HP, 125 VAC									
	D	21 A, 125/250 VAC 2 HP, 250 VAC, 1 HP, 125 VAC	N	No approvals									
	E	21 A, 125/250 VAC 15 A, 125/250 VAC, 100'000 cy. 2 HP, 250 VAC, 1 HP, 125 VAC	P	20.5 A, 125/250 VAC 1½ HP, 250 VAC, ½ HP, 125 VAC ¼ HP, 250 VDC, ½ HP, 125 VDC									
	K	20.5 A, 125/250 VAC 1½ HP, 250 VAC, ½ HP, 125 VAC	Q	12 A, 125/250 VAC ¼ HP, 250 VAC, ½ HP, 125 VAC ¼ A, 250 VDC, ½ A, 125 VDC									
	L	12 A, 125/250 VAC ¼ HP, 250 VAC, ½ HP, 125 VAC	R	6 A, 125/250 VAC ¼ HP, 250 VAC, ½ HP, 125 VAC ¼ A, 250 VDC, ½ A, 125 VDC									
EN/IEC ratings	A	16 (6) A, 250 V~ 5E4 T125 µ approved											
	B	10 (3) A, 250 V~ 5E4 T125 µ approved											
	C	6 (3) A, 250 V~ 5E4 T125 µ approved											
	D	21 (8) A, 250 V~ 1E4 T105 µ approved											
Type of actuator		No symbol, without lever											
	J0 to J9	Straight lever (width 7 mm)											
	L0 to L9	Simulated roller lever											
	M0 to M9	Customer specified lever (KV)											
	P0 to P9	Straight lever (width 4 mm)											
	T0 to T9	Roller level											
	U0 to U9	Outside mounted lever											
Actuator position		No symbol, without lever											
	2	Rear lever											
	4	Front lever											
Customer version		No symbol, standard type											
	AA to YY	Specials for customers											

G3

Snap-action Microswitches

Miniature

G3

Characteristics	<ul style="list-style-type: none"> ■ low operating force, high current capacity ■ < 15 cn operating force option ■ > 3 mm contact gap, change-over mechanism option
Rating	Up to 250 VAC, 18 A
Dimensions (mm)	28 × 16 × 10
Actuator	<ul style="list-style-type: none"> ■ plunger ■ ramp plunger
Approvals	ENEC, UL, CSA



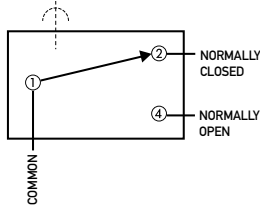
Preferred Range

Ordering Reference	Actuating Force (N)	Actuating Force (ozf)	Sealing	Operating pos. (mm)	Operating pos. (in)	Terminal	Circuit	Actuator	Contacts	Electrical rating
G3M1T1RULAU	0.15	0.54	IP40	14.7	0.57	Faston 6.3 × 0.8	CO	Ramp plunger	Gold plated	Up to 250 VAC, 7 A
G3M1T1PULAU	0.15	0.54	IP40	14.7	0.57	Faston 6.3 × 0.8	CO	Plain plunger	Gold plated	Up to 250 VAC, 7 A
G3M1T1RU-L	0.15	0.54	IP40	14.7	0.57	Faston 6.3 × 0.8	CO	Ramp plunger	Ag	Up to 250 VAC, 7 A
G3M1T1PUL	0.15	0.54	IP40	14.7	0.57	Faston 6.3 × 0.8	CO	Plain plunger	Ag	Up to 250 VAC, 7 A
G3M1T2RUL	0.15	0.54	IP40	14.7	0.57	Faston 4.8 × 0.8	CO	Ramp plunger	Ag	Up to 250 VAC, 7 A
G3M1T2PUL	0.15	0.54	IP40	14.7	0.57	Faston 4.8 × 0.8	CO	Plain plunger	Ag	Up to 250 VAC, 7 A
G3M1T3RUL	0.15	0.54	IP40	14.7	0.57	Faston 4.8 × 0.5	CO	Ramp plunger	Ag	Up to 250 VAC, 7 A
G3M1T3PUL	0.15	0.54	IP40	14.7	0.57	Faston 4.8 × 0.5	CO	Plain plunger	Ag	Up to 250 VAC, 7 A
G3M1T4RUL	0.15	0.54	IP40	14.7	0.57	Solder	CO	Ramp plunger	Ag	Up to 250 VAC, 7 A
G3M1T4PUL	0.15	0.54	IP40	14.7	0.57	Solder	CO	Plain plunger	Ag	Up to 250 VAC, 7 A
G3G4T1RUL	2.70	7.20	IP40	14.5	0.57	Faston 6.3 × 0.8	CO	Ramp plunger	> 3mm gap	Up to 250 VAC, 10 A
G3G4T1PUL	2.70	7.20	IP40	14.5	0.57	Faston 6.3 × 0.8	CO	Plain plunger	> 3mm gap	Up to 250 VAC, 10 A

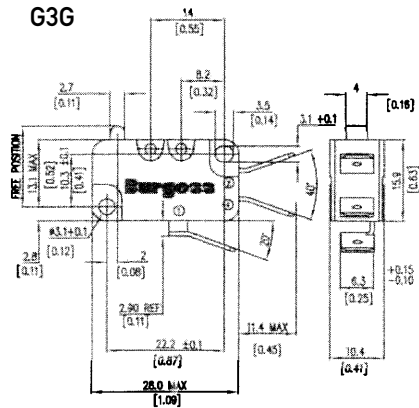
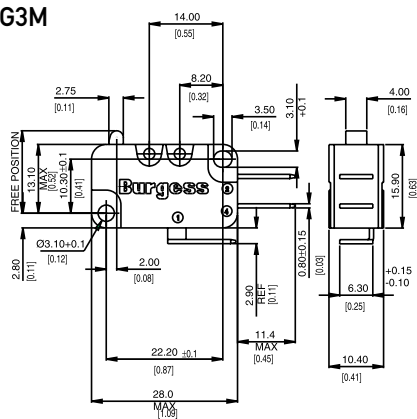
Specifications

Housing	Flame retardant glass-filled nylon
Plunger	Flame retardant glass-filled nylon
Mechanism	Snap-action, single pole - beryllium copper trident spring
Functions	Change-over, Normally open, Normally closed
Contacts	Fixed - Silver cadmium oxide or gold plate on silver cadmium oxide, Moving - Silver or gold plate on silver
Terminals	6.3 mm (0.25 in), 4.8 mm (0.19 in) faston: NC (2), NO (4) - Brass, Common (1) - Brass, silver-plated Solder: Brass, silver-plated
Temperature range °C	-40°C to + 85°C
Mechanical life	10 ⁶ to 10 ⁷ cycles minimum (impact free actuation) - dependent on operating force
Protection	IP 40 (enclosure)
Mounting	Side mounting
Actuators	Plain plunger, Ramp plunger

Circuit diagram



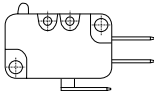
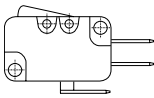
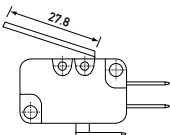
Dimensions



Recommended maximum electrical ratings

	Voltage (max)	Load (A)	Inductive load (A)	Approval
G3M1	250 VAC	7 (0.75 pf)		UL 1054/CSA 22.2 No. 55 - 6,000 operations
	250 VAC	6	2	EN61058-1, T85, 50,000 operations
G3M2	250 VAC	10.1 (0.75 pf)		UL 1054/CSA 22.2 No. 55 - 6,000 operations
	250 VAC	10	3	EN61058-1, T85, 50,000 operations
G3M3	250 VAC	15 (0.75 pf)		UL 1054/CSA 22.2 No. 55 - 6,000 operations
	250 VAC	16	4	EN61058-1, T85, 10,000 operations
G3M4	250 VAC	18 (0.75 pf)		UL 1054/CSA 22.2 No. 55 - 6,000 operations
	250 VAC	18	4	EN61058-1, T85, 10,000 operations
G3G4	250 VAC	10.1 (0.75 pf)		UL 1054/CSA 22.2 No. 55 - 6,000 operations
	250 VAC	10	3	EN61058-1, T85, 10,000 operations

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential		Over travel Maximum	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)		
Plain plunger 	G3M1..P	0.15	0.54	0.005	0.02	15.9	0.625	14.7 ± 0.3	0.57	+0.01 -0.001	0.2	0.008	*
	G3M2..P	0.70	2.52	0.200	0.72	15.9	0.625	14.7 ± 0.3	0.57		0.2	0.008	
	G3M3..P	1.10	3.96	0.300	1.08	15.9	0.625	14.7 ± 0.3	0.57		0.2	0.008	
	G3M4..P	1.70	6.11	0.500	1.80	15.9	0.625	14.7 ± 0.3	0.57		0.2	0.008	
	G3G4..P	2.70	7.20	0.200	0.72	15.9	0.625	14.5 ± 0.3	0.57		0.5	0.020	
Ramp plunger 	G3M1..R	0.15	0.54	0.005	0.02	15.9	0.625	14.7 ± 0.3	0.57	+0.01 -0.001	0.2	0.008	*
	G3M2..R	0.70	2.52	0.200	0.72	15.9	0.625	14.7 ± 0.3	0.57		0.2	0.008	
	G3M3..R	1.10	3.96	0.300	1.08	15.9	0.625	14.7 ± 0.3	0.57		0.2	0.008	
	G3M4..R	1.70	6.11	0.500	1.80	15.9	0.625	14.7 ± 0.3	0.57		0.2	0.008	
	G3G4..R	2.70	7.20	0.200	0.72	15.9	0.625	14.5 ± 0.3	0.57		0.5	0.020	
Plain lever 	G3M1..	0.12		0.03		22.0		16.5 ± 0.8			0.5		
	G3M2..	0.35		0.08		22.0		16.5 ± 0.8			0.5		
	G3M3..	0.70		0.15		22.0		16.5 ± 0.8			0.5		
	G3M4..	0.90		0.20		22.0		16.5 ± 0.8			0.5		

Lever width 7mm Please contact Saia-Burgess for referencing details on lever variants.

* Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic type	G3	Example: G3	M	1	T1	P	C2	UL	AU
Contact gap	M	Microgap	G	> 3 mm gap					
Actuating Characteristic	1	0.15	2	0.70	3	1.10	4	1.70	Microgap 2.70 > 3 mm gap
Terminals	T1	Faston 6.3 × 0.8	T2	Faston 4.8 × 0.8	T3	Faston 4.8 × 0.5 (microgap only)	T4	Solder	
Note:		Microgap - parallel terminals:		> 3 mm gap - flared terminals					
Actuators	P	Plain plunger	R	Ramp plunger					
Circuit		No symbol, change-over	C2	Normally closed	C4	Normally open			
Approvals		No symbol, ENEC	UL	UL and CSA					
Contacts		No symbol, silver, silver cadmium oxide	AU	Gold plated silver, gold plated silver cadmium oxide					

340

Snap-action Microswitches

Miniature

340

Characteristics ■ wiping contacts, leaf spring mechanism
■ 3 mm contact gap option

Rating 250 VAC, 16 A max.

Dimensions 28.8 × 20.4 × 10.1

Actuator ■ plunger
■ roller lever
■ plain levers
■ simulated roller lever
■ moulded lever

Approvals ENEC



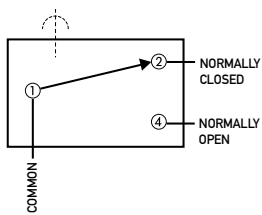
Popular Products

Ordering Reference	Actuating Force (g)	Operating pos. (mm)	Terminal	Contact Gap (mm)	Actuator	Contacts	Electrical rating ENEC	UL/CSA
343/40/75	75	14,4–15,17	6,35 × 0,8	1	Plunger	AgCd0	16,1 A, 250 VAC	10 A
343/120/350	420	14,15–14,91	6,35 × 0,8	3	Plunger	AgCd0	16 (3)/250 VAC	12 A

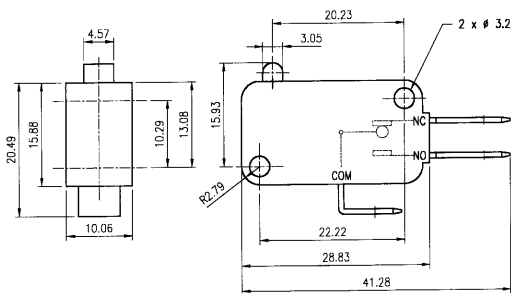
Specifications

Housing	Glass-filled flame retardant Nylon 6,6
Plunger	Glass-filled flame retardant Nylon 6,6
Mechanism	Snap action, single pole leaf spring mechanism
Functions	Change-over, Normally open, Normally closed
Contacts	Silver
Terminals	Solder, Faston and Rast 5 terminals
Temperature range	-10°C to +85°C
Mechanical life	10 ⁷ cycles minimum (3 mm gap 10 ⁶) (impact-free actuation)
Protection	IP40 (enclosure)
Mounting	Side mounting
Actuators	Plunger, plain lever, roller lever

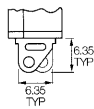
Circuit diagram



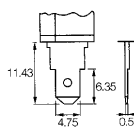
Dimensions



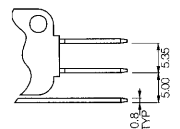
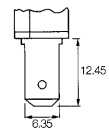
342
Solder



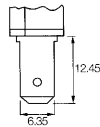
345
4,75 × 0,5
Fast on



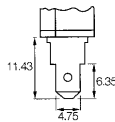
348
Rast 5
Fast on



343
6,35 × 0,8
Fast on



346
4,75 × 0,8
Fast on



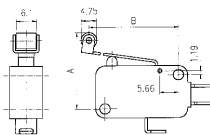
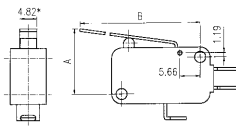
Recommended maximum electrical ratings A3 shown below

Versions	ENEC	UL / CSA		Motor load
75 g	*16.1 A, 250 VAC, 10 E3, T85	N/a	10 A 125/250 VAC	¼ HP
3 mm Wide gap	16(3) A, 250 VAC, 50 E3, T85	N/a	12 A 125/250 VAC	½ HP

* 345 and 346 terminals 10 (4 A) ENEC

Operating Characteristics

Actuator	Reference	Actuating Force Maximum (g)	Release Force Minimum (g)	Free Position Maximum (mm)	Operating Position	Length (mm)	Movement Differential Maximum (mm)	Overtravel Minimum (mm)
Plunger	34-/40/75	75	25	15.93	14.4-15.17		0.25	1.32
	34-/120/350	420	120	15.93	14.15-14.91		0.76	1.06
Plain lever (Back position)	ZD0			16.99		22.56		
	ZD1			18.61		33.9		
	ZD2			25.8		84.43		
Roller lever	ZDS0			22.15		19.67		
	ZDS1			23.86		31.7		



Type coding key for standard products

	34	Example: 34	2/	40/	75	NO	ZD0
Basic type	34						
Terminal type	2	solder					
	3	6,35 × 0,8 fast-on					
	5	4,75 × 0,5 fast-on					
	6	4,75 × 0,8 fast-on					
	8	6,35 × 0,8 Rast 5†					
Contact gap	40	1 mm standard					
	120	3 mm					
Operating force	75	75 g					
	350	420 g (3 mm gap)					
Circuit		No symbol, change-over					
	NO	Normally open					
	NC	Normally closed					
Actuator		No symbol, plunger					
	ZD0	Plain lever 22,5 mm					
	ZD1	Plain lever 33,9 mm					
	ZD2	Plain lever 84,4 mm					
	ZDS0	Roller lever 19,67 mm					
	ZDS1	Roller lever 31,7 mm					

600

Snap-action Microswitches

Torque

600

Characteristics	<ul style="list-style-type: none">■ low and medium torque operation■ horizontal or vertical actuation■ 6.35 × 0.8 faston terminals
Rating	250 VAC, 5 A
Dimensions (mm)	39.6 × 22 × 16.4
Actuator	■ wire levers
Approvals	none



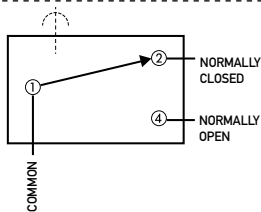
Popular Product

Ordering Reference	Actuating Force (Ncm)	Pretravel.	Terminal	Circuit	Actuator	Contacts	Electrical rating
BB1/R-51	6	23°	6.3 × 0.8	C0	Torque Wire	Ag Au	5 A/250 VAC

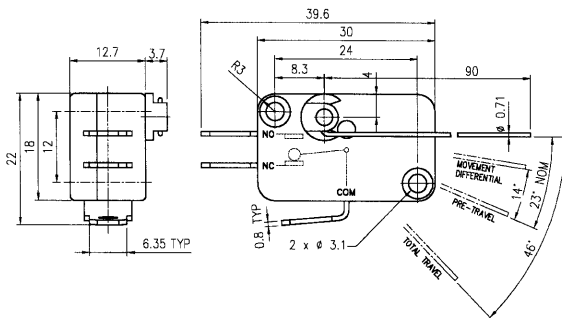
Specifications

Housing	Glass fibre reinforced nylon
Plunger	Acetal
Mechanism	Snap-action, single pole
Functions	Change-over
Contacts	Silver
Terminals	Faston
Temperature range °C	-40°C +85°C
Mechanical life	5 x 10 ⁶ , Cycles maximum (Impact free Actuators)
Protection	IP40 (enclosure)
Mounting	Side mounting
Actuators	Stainless steel

Circuit diagram



Dimensions



Recommended electrical ratings

Approvals held	None
Electrical rating	5 A, 250 V, AC
Terminals	6,35 x 0,8 fast-on
Mechanical life	>5 million operations
Temperature rating	T85 °C

Type coding key for standard products

Basic type	BB1	Low Torque Wire Operated Microswitch	Example: 600	R	S1
Operating force	R	Light	6 g/cm		
	B	Medium	24 g/cm		
Actuator	S1	- Horizontal			
	S10	- Vertical			

QA4/PBA4

Microswitch Push Button

Momentary

QA4/PBA4

Panel cut-out (mm) \varnothing 6.1

- Characteristics
- for use with V4N/V4NC series
 - long overtravel up to 5 mm
 - simple clip-on attachment
 - round or square bezels
 - push button options

Rating 250 VAC, 5 A

Dimensions (mm) 20 × 6.45 × 38.3

- Actuator
- stainless steel plunger
 - polyamide (PA 6.6) plunger

Approvals UL, CSA



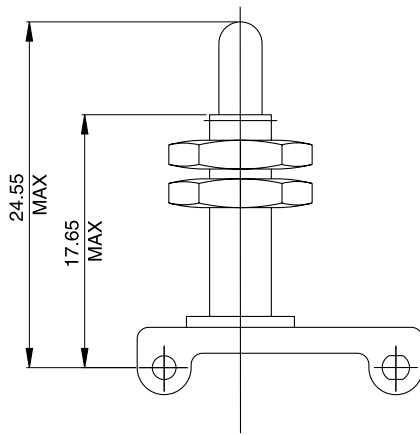
Preferred Range

Ordering Reference	Basic switch	Button	Bezel	Sealing kit	Actuator kit
V4NCT7		PBRR	BZR	PBSLK	QA4

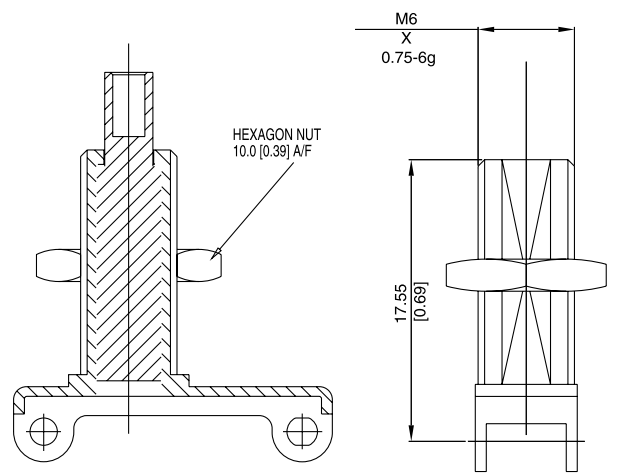
Specifications

Clip-on frame	Glass fibre reinforced polyamide (PA 6.6)
Bezel	ABS polymer - black (PBA4 only)
Cowl	Synthetic rubber (PBA4 only)
"O"-Ring	Nitrile (PBA4 only)
Locknut	Brass nickel plate
Button/Plunger	ABS polymer (PBA4) Stainless steel (QA4)
Basic switches	V4NC (see pages 52 to 55)
Temperature range °C	-10°C to +85°C
Mechanical Life	5 × 10 ⁶ cycles minimum (Mechanism 2 × 10 ⁶ cycles minimum) (Impact free actuation)
Mounting mm (in)	Single hole Ø 6.4 (0.25) suitable for panels up to 8.0 (0.3) thick
Torque max. Nm	0.4 to be applied to locknut

Dimensions QA4

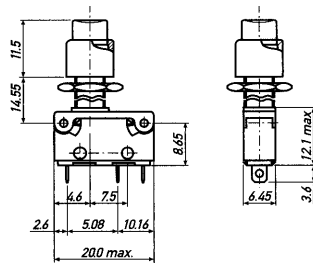


PBA4



Configuration

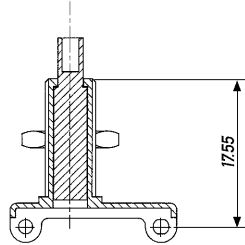
Basic switch V4NC... See pages 52 to 55
 V4N... See page 56 to 59



Type coding key for standard products

Actuator kit PB without insert switch, button or bezel
PB-clip-on assembly round or square bezels

Example: PBA4 PBR RED V4N

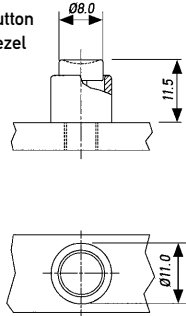


A4 Actuator kit only
AS4 Sealed actuator kit only

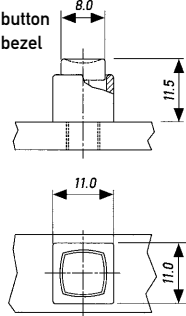
Accessories can be ordered separately using bracketed references

- (PB)R Round Button (complete with bezel)
- (PB)S Square Button (complete with bezel)
- (B)ZR Round Bezel
- (B)ZS Square Bezel
- (PB)SLK Sealing Kit (complete with button & bezel)

Round button
Round bezel

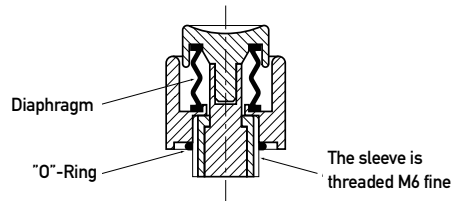


Square button
Square bezel



PBSLK

Sealing kit (O-ring and diaphragm)
Bezel and button can be ordered separately



- Button Colours
- RED (R when ordered complete with Insert switch)
 - YELLOW (Y when ordered complete with Insert switch)
 - GREEN (G when ordered complete with Insert switch)
 - BLUE (BU when ordered complete with Insert switch)
 - BLACK (B when ordered complete with Insert switch)
 - WHITE (W when ordered complete with Insert switch)

Example reference V4NT7PBSR is a V4NT7 (basic switch, p. 59)
with PBS (square button complete with bezel)
and a RED button

Special Features /

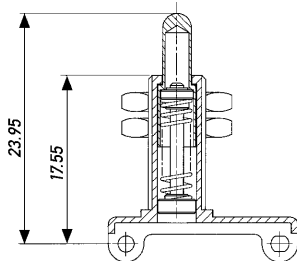
Saia-Burgess specialise in customer specific solutions.
Additional product variants are available or can be provided.
If your requirements cannot be satisfied from the options listed,
please contact www.saia-burgess.com or your local SB outlet.

Type coding key for standard products

Actuator kit QA4

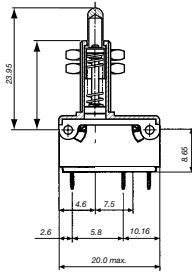
without insert switch

Example: QA4 QV4NCT7



With insert switch

Q followed by switch reference
 V4NC... See pages 52 to 55
 V4N... See pages 56 to 59
 Example reference: QV4NCT7



Special Features



Saia-Burgess specialise in customer specific solutions.
 Additional product variants are available or can be provided.
 If your requirements cannot be satisfied from the options listed,
 please contact www.saia-burgess.com or your local SB outlet.

V3Q

Push Button Snap-action

Momentary

V3Q

Panel cut-out (mm)	Ø 12.7
Characteristics	<ul style="list-style-type: none"> ■ long overtravel assemblies with single or double pole options ■ IEC IP67, pre-wired option
Rating	up to 250 VAC, 10 A
Dimensions (mm)	36.5 × 33.6 × 17.3 single pole 36.5 × 33.6 × 26.2 double pole
Actuator	<ul style="list-style-type: none"> ■ plunger ■ roller plunger
Approvals	UL, CSA



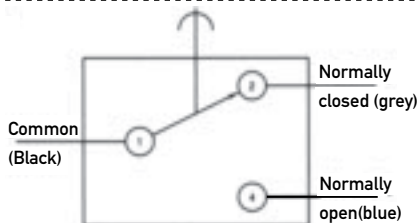
Preferred Range

Ordering Reference	Actuating Force (N)	Actuating Force (ozf)	Sealing	Operating pos. (mm) (in)		Terminal	Circuit	Actuator	Contacts	Electrical rating
V3Q1UL	3.3	12.00	IP40	28.6	1.13	Screws	CO	Plunger	Ag, AgCd0	Up to 250 VAC, 10 A
V3SQ1UL	3.9	12.00	IP67	28.6	1.13	Pre-wired	CO	Plunger	Ag	Up to 250 VAC, 5 A
V3QR1UL	3.3	12.00	IP40	39.7	1.56	Screws	CO	Roller plunger	Ag, AgCd0	Up to 250 VAC, 10 A
V3SQR1UL	3.9	12.00	IP67	39.7	1.56	Pre-wired	CO	Roller plunger	Ag	Up to 250 VAC, 5 A
2V3Q1UL	8.9	32.00	IP40	28.4	1.12	Screws	CO	Plunger	Ag, AgCd0	Up to 250 VAC, 10 A
2V3Q2	8.9	32.00	IP40	47.4	1.87	Screws	CO	Plunger	Ag, AgCd0	Up to 250 VAC, 10 A

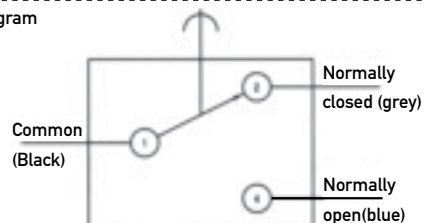
Specifications

Frame	Mild steel, zinc-plated
Sleeve	Brass
Plunger	Mild steel, zinc-plated
Roller	Nylon
Mechanism	V3Q, V3SQ - Single pole change-over / 2V3Q - Double pole change-over
Contacts	Silver, silver cadmium oxide
Terminals	V3Q, 2V3Q - M3 screws and lockwashers / V3SQ - pre-wired
Temperature range	-10°C to +85°C
Mechanical life	10 ⁶ cycles minimum (impact free actuation)
Type of protection	V3Q, 2V3Q - IP40 (enclosure) / V3SQ - IP67 (enclosure)
Mounting	Panel mounting - threaded plunger sleeve
Cables	V3SQ only - PVC 0.5M (19.7 in) long
Cowl	V3SQ only - silicone rubber

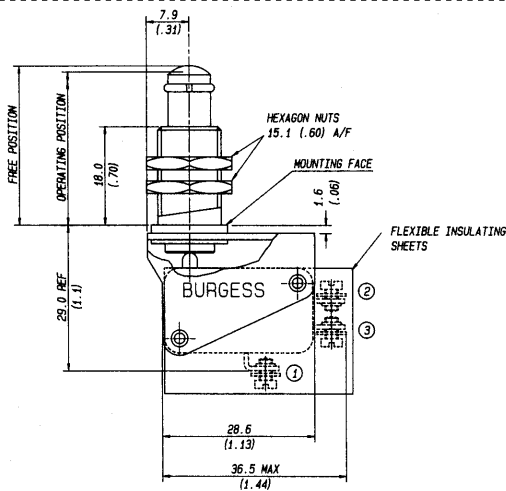
Circuit diagram
V3Q



Circuit diagram
V3SQ



Dimensions



Recommended maximum electrical ratings

	Voltage (max)	Load (A)	Approval
V3Q / 2V3Q	250 VAC	10 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations (85°C)
	125 VAC	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations (85°C)
	0 - 15 VDC	10	General rating - 50,000 operations (85°C)
	15 - 30 VDC	7	General rating - 50,000 operations (85°C)
V3SQ	125 VAC	5 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations (85°C)
	250 VAC	5 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations (85°C)
	250 VAC	5	EN61058-1, T85, 10,000 operations
	0 - 15 VDC	6	General rating - 50,000 operations (85°C)
	15 - 30 VDC	3	General rating - 50,000 operations (85°C)

V3Q

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential		Overtravel	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Q1 plunger	V3Q1UL	3,3	12,00	1,1	4	31	1,22	28,6 ± 1,5	1,13 ± 0,06	0,4	0,016	4,60	0,18
	V3SQ1UL	3,9	14,00	1,1	4	31	1,22	28,6 ± 1,5	1,13 ± 0,06	0,4	0,016	4,60	0,18
Q roller plunger	!QR1UL	3,3	12,00	1,1	4	42	1,65	39,7 ± 1,5	1,56 ± 0,06	0,4	0,016	4,75	0,19
	!SQR1UL	3,4	14,00	1,1	4	42	1,65	39,7 ± 1,5	1,56 ± 0,06	0,4	0,016	4,75	0,19
Q1 plunger	2V3Q1UL	8,9	32,00	4,5	16	31	1,22	28,4 ± 1,5	1,12 ± 0,06	1,2	0,05	3,8	0,15
Q2 Plunger	2V3Q2	8,9	32,00	4,5	16	50	1,96	47,4 ± 1,5	1,87 ± 0,06	1,2	0,05	12,1	0,48

Type coding key for standard products

Basic type	V3Q V3SQ 2V3Q	Example: V3Q	1	UL
Actuators	1 Plunger - sleeve length 18 mm (0.7 in): available with V3Q, V3SQ, 2V3Q R1 Roller plunger: available with V3Q, V3SQ 2 Plunger - sleeve length 29 mm (1.14 in): available with 2V3Q only			
Approvals	UL, UL, CSA			

C0911

Push Button Snap-action

Momentary

C0911

Panel cut-out (mm) \varnothing 12.7

Characteristics

- single pole
- change-over
- momentary function

Rating 250 VAC, 15 A

Dimensions (mm) 43 × 15

Actuator

- round button
- rectangular button
- 4 colour options

Approvals ENEC, UL, CSA



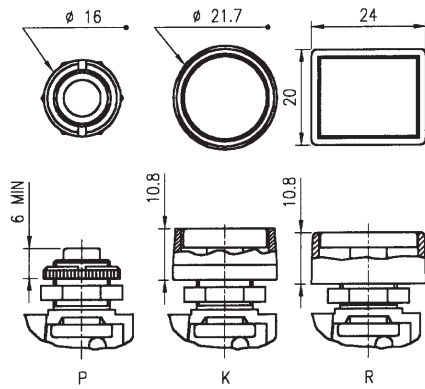
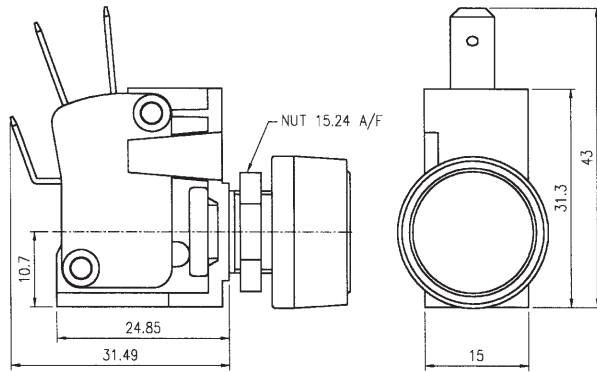
Popular products

Ordering Reference	Basic Switch	Button	Button colour	Terminal	Switch
C0911KBR	383/25/10	Large, round	Red	6.35 × 0.8	See 380 Series
C0911KBB	383/25/10	Large, round	Black	6.35 × 0.8	See 380 Series

Specifications

Switch	383/25/10
Bracket/nut	Nylon 6.6
Knurlet nut/metal shroud	Chrome-plated brass

Dimensions



Recommended maximum electrical ratings

Approvals held	UL (File No E91973) ENEC CSA
Electrical rating	15(4) A, 250 VAC, 10 E3
Switch type	383/25/10
Terminals	6.35 × 0.8 fast-on
Mechanical life	>10 million operations
Temperature rating	T85°C
Insulation resistance	>1250 V
Tracking resistance	PTI KB 250

Type coding key for standard products

Basic type	C0911	Momentary pushbutton range	Example: C0911	P	B	A	R
Button	P	small round button					
	K	large round button and shroud					
	R	rectangular button and shroud					
Bracket	B						
Shroud (option)		No symbol – standard black nylon shroud					
	A	Metal shroud (K type only)					
Button colour	R	Red					
	B	Black					
	G	Green					
	W	White					

ZB5

Push Button Snap-action

Latching

ZB5

Panel cut-out (mm) \varnothing 12.7

Characteristics

- single pole
- changeover
- latching function

Rating 250 VAC, 15 A

Dimensions (mm) 43 × 15

Actuator

- round button
- rectangular button
- 4 colour options

Approvals ENEC, UL, CSA



Popular products

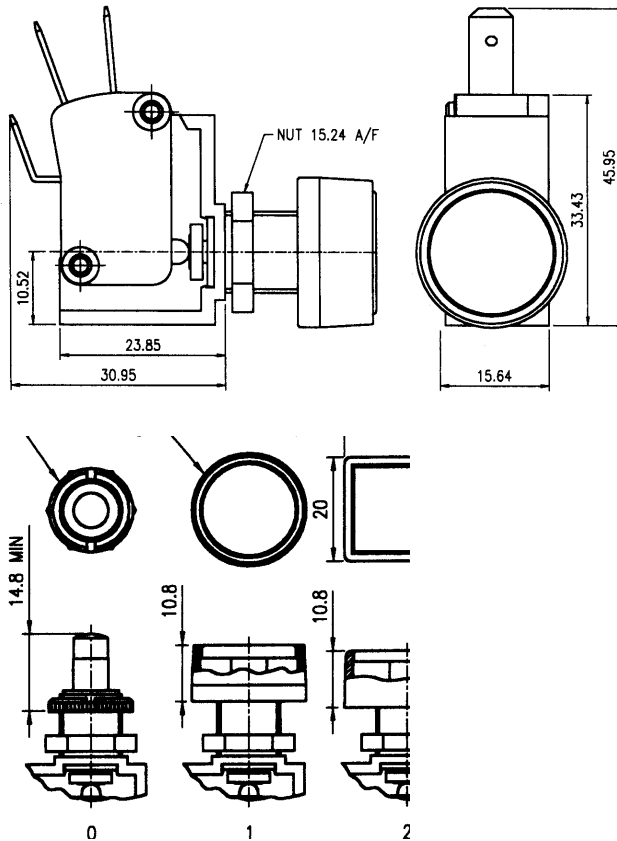
Ordering Reference	Basic Switch	Button	Button colour	Terminal	Shroud Motorical
383ZB51RB	383/25/10	Large, round	Red	6,3 × 0,8	Black Nylon
383ZB51GB	383/25/10	Large, round	Green	6,3 × 0,8	Black Nylon
383ZB51WB	383/25/10	Large, round	White	6,3 × 0,8	Black Nylon
383ZB51RB	383/25/10	Large, round	Red	6,3 × 0,8	Black Nylon

ZB5

Specifications

Switch	383/25/10
Bracket/nut	Nylon 6.6
Latching mechanism	Acetal
Knurled nut/metal shroud	Chrome-plated brass

Dimensions



Recommended maximum electrical ratings

Approvals held	UL (File No E91973) ENEC CSA
Electrical rating	15(4) A, 250 VAC, 10 E3
Switch type	383/25/10
Terminals	6.35 × 0.8 fast-on
Mechanical life	>10 million operations
Temperature rating	T85°C
Insulation resistance	>1250 V
Tracking resistance	PTI KB 250

ZB5

Type coding key for standard products

Basic type	383	383/25/10	Example: 383	ZB5	0	R	B
Bracket	ZB5	Latching pushbutton range					
Button type	0	Small round button					
	1	Large round button and shroud					
	2	Rectangular button and shroud					
Button colour	R	Red					
	B	Black					
	G	Green					
	W	White					
Shroud material	B	Black nylon					
	A	Aluminium					



Switches

Snap-action Microswitches, Standard	Type	Preferred Products	Page
	PN4	PN401 PN402 PN4K152 PN4K63 PN4KZ56 PN4GK48 PN4GK26 PN41 PN4G PN4GH	102
	3BR	3BR103 3BR510	106
	K5	K5UL K5CUL K5KUL K5KRUL K5QUL	109

PN4

Snap-action Microswitches

Standard

PN4

Characteristics ■ precision switching
■ long mechanical life
■ screw terminals

Rating 250 VAC, 15 A

Dimensions (mm) 49 × 22 × 17.5

Actuator ■ plunger
■ plain lever
■ roller lever

Approvals UL, CSA



Preferred Range

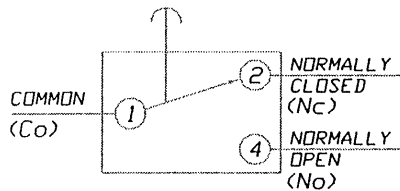
Ordering Reference	Actuating Force (N)	Actuating Force (ozf)	Sealing	Operating pos. (mm)	Operating pos. (in)	Terminal	Circuit	Actuator	Contacts	Electrical rating
PN401	3.8	13.7	IP40	16.0	0.63	Screw/washer	C0	Plunger	Ag	Up to 250 VAC, 15 A
PN4D2	3.8	13.7	IP40	22.2	0.87	Screw/washer	C0	Spring plunger	Ag	Up to 250 VAC, 15 A
PN4K152	0.3	1.08	IP40	25.0	1.00	Screw/washer	C0	Plain lever (length 152 mm, 6.0 in)	Ag	Up to 250 VAC, 15 A
PN4K63	0.9	3.2	IP40	19.0	0.75	Screw/washer	C0	Plain lever (length 63.5 mm, 2.5 in)	Ag	Up to 250 VAC, 15 A
PN4KZ56	1.5	5.4	IP40	8.5	0.33	Screw/washer	C0	Reverse action plain lever	Ag	Up to 250 VAC, 15 A
PN4GK48	1.1	4.0	IP40	30.2	1.19	Screw/washer	C0	Roller lever (length 48.2 mm, 1.90 in)	Ag	Up to 250 VAC, 15 A
PN4GK26	1.7	6.1	IP40	30.2	1.19	Screw/washer	C0	Roller lever (length 26.7 mm, 1.05 in)	Ag	Up to 250 VAC, 15 A
PN41	3.8	13.7	IP40	21.8	0.86	Screw/washer	C0	Long overtravel plunger	Ag	Up to 250 VAC, 15 A
PN4G	3.8	13.7	IP40	33.3	1.31	Screw/washer	C0	Spring plunger, in-line roller	Ag	Up to 250 VAC, 15 A
PN4GH	3.8	13.7	IP40	33.3	1.31	Screw/washer	C0	Spring plunger, across-line roller	Ag	Up to 250 VAC, 15 A

Specifications

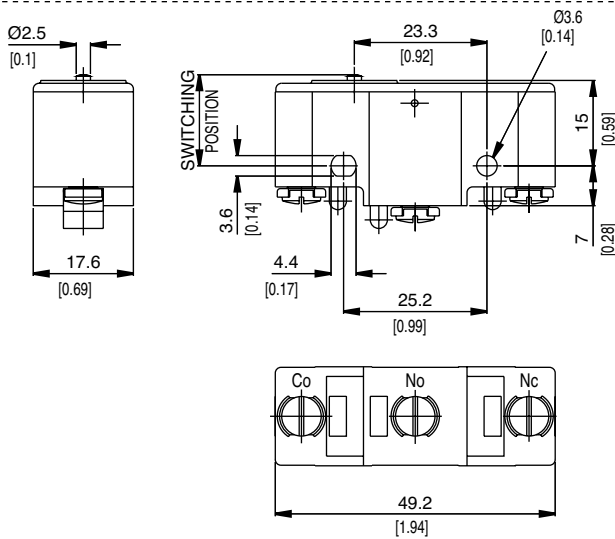
Housing	PBT thermoplastic polyester resin
Plunger	PBT thermoplastic polyester resin
Mechanism	Snap-action, single pole
Functions	Change-over
Contacts	Silver
Terminals	Screw terminals with cup washers
Temperature range °C	-10°C to +85°C
Mechanical life	10 ⁶ cycles minimum (impact free actuation)
Protection	IP 40 (enclosure)
Mounting	Side or panel mounting
Actuators	Plain levers - zinc-plated mild steel, Roller levers - zinc-plated mild steel, stainless steel roller

Circuit diagram

DIAGRAM OF CONNECTIONS



Dimensions


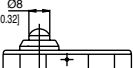
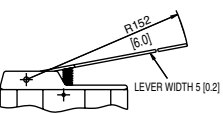
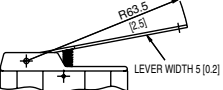
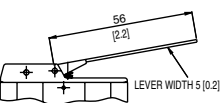
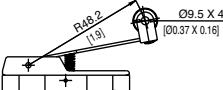
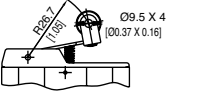


Recommended maximum electrical ratings

Voltage (max)	Load (A)	Horsepower	Approval
250 VAC	15 (0.75 pf)	-	ULS 1054/CSA 22.2 No. 55 - 6,000 operations
125 VAC	15 (0.75 pf)	-	ULS 1054/CSA 22.2 No. 55 - 6,000 operations
250 VAC	-	¼ HP	ULS 1054 - Horsepower - 6,000 operations
125 VAC	-	¼ HP	ULS 1054 - Horsepower - 6,000 operations
0 - 15 VDC	15	-	General rating - 50,000 operations
15 - 30 VDC	10	-	General rating - 50,000 operations

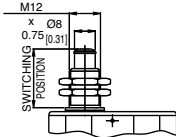
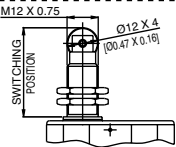
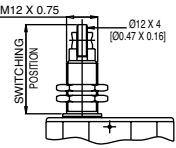
PN4

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Operating Position		Movement Differential Minimum		Over travel	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Plunger 	PN401	3.8	13.70	1.3	4.7	16.0 ± 0.4	0.63 ± 0.016)	0.02	0.0008	0.2	0.008
Spring plunger 	PN4D2	3.8	13.70	1.3	4.7	22.2 ± 0.4	0.87 ± 0.016	0.04	0.0016	2.3	0.09
Plain lever 	PN4K152	0.3	1.08	0.1	0.36	25.5 ± 1.5	1.00 ± 0.060	3.0	0.12	10.0	0.39
Lever width: 5 mm, 0.2 in											
Plain lever 	PN4K63	0.9	3.20	0.1	0.36	19 ± 0.8	0.75 ± 0.032	1.2	0.047	5.6	0.22
Lever width: 5 mm, 0.2 in											
Reverse action plain lever 	PN4KZ56	1.5	5.40	0.5	1.80	8.5 ± 0.8	0.33 ± 0.032	1.0	0.004	6.0	0.24
Lever width: 5 mm, 0.2 in											
Roller lever 	PN4GK48	1.1	4.00	0.2	0.72	30.2 ± 0.8	1.19 ± 0.032	0.9	0.035	4.2	0.165
Roller lever 	PN4GK26	1.7	6.11	0.2	0.72	30.2 ± 0.8	1.19 ± 0.032	0.5	0.02	2.0	0.079

PN4

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Operating Position		Movement Differential Minimum		Over travel	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Long overtravel plunger 	PN41	3.8	13.70	1.3	4.7	21.8 ± 0.7	0.86 ± 0.028	0.04	0.0016	5.5	0.21
Spring plunger - in-line roller 	PN4G	3.8	13.70	1.3	4.7	33.3 ± 1.2	1.31 ± 0.047	0.04	0.0016	3.5	0.14
Spring plunger - across-line roller 	PN4GH	3.8	13.70	1.3	4.7	33.3 ± 1.2	1.31 ± 0.047	0.04	0.0016	3.5	0.14

Type coding key for standard products

Basic type PN4

Example: PN4 01

Actuators	Code	Description
	01	Plain plunger
	1	Panel mount plunger
	D2	Spring plunger
	G	Plunger with in-line roller
	GH	Plunger with across-line roller
	GK26	Roller lever 26.0 mm
	GK35	Roller lever 35 mm
	GK48	Roller lever 48.2 mm
	GK63	Roller lever 63 mm
	K48	Plain lever 48 mm
	K63	Plain lever 63.5 mm
	K63X	Plain lever 63 mm without spring
	K152	Plain lever 152.0 mm
	KZ56	Reverse action roller lever 56.0 mm

Special Features / Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.

PN4 Terminal cover / Part No: 3.204.0222

3BR

Snap-action Microswitches

Standard

3BR

- Characteristics
- choice of IP54 or IP67 sealed versions
 - precise movements and exceptional repeat accuracy
 - flying lead version available
 - long overtravel

Rating 250 VAC, 10 A max.

Dimensions (mm) 53.1 × 20.6 × 30.8

Actuator ■ plunger

Approvals UL, CSA



Preferred Range

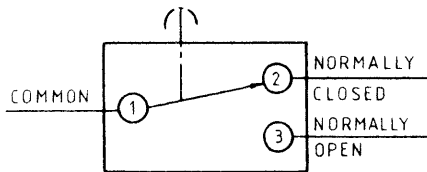
Ordering Reference	Actuating Force		Sealing	Operating pos.		Terminal	Circuit	Actuator	Contacts	Electrical rating
	(N)	(ozf)		(mm)	(in)					
3BR103	7.2	26.00	IP54	39.3	1.55	Screw	CO	Plunger	Ag	Up to 125 VAC, 10 A
3BR510	7.2	26.00	IP67	39.3	1.55	Screw	CO	Plunger	Ag	Up to 125 VAC, 10 A

3BR

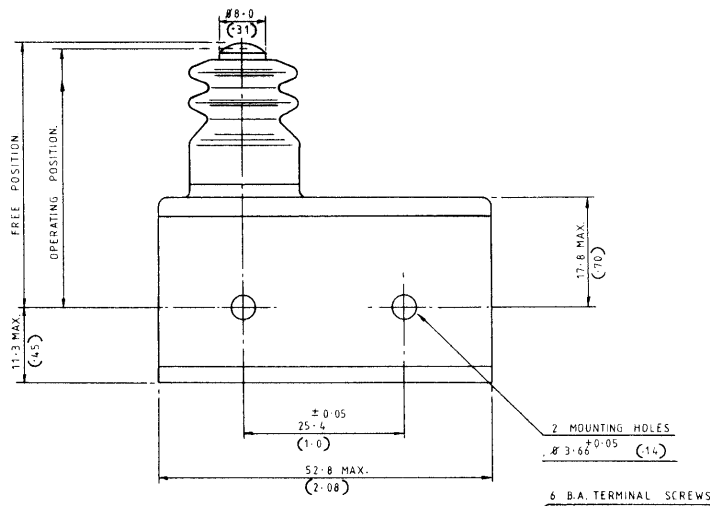
Specifications

Housing	Phenolic
Plunger	Stainless steel
Cowl	Silicone rubber
Mechanism	Single pole change-over
Contacts	Silver
Terminals	Screw terminals with captive washers
Temperature	-10°C to +85°C
Mechanical life	10 ⁶ cycles minimum (impact free actuation)
Protection	3BR / 510 IP67 / 3BR103 IP54 (enclosure)
Mounting	Side mounting

Circuit diagram



Dimensions



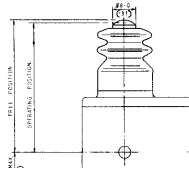
Recommended maximum electrical ratings

Voltage (max)	Load (A)	Horsepower	Approval
250 VAC	5 (0.75 pf)	-	CSA 22.2 No. 55 - 6,000 operations
125 VAC	10 (0.75 pf)	-	CSA 22.2 No. 55 - 6,000 operations
250 VAC	-	¼ HP (0.45 pf)	CSA 22.2 No. 55 - 6,000 operations
125 VAC	-	¼ HP (0.45 pf)	CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	10	-	General rating - 50,000 operations
15 - 30 VDC	5	-	General rating - 50,000 operations

3BR

Operating Characteristics

Actuator	Reference	Actuating Force		Release Force		Free Position		Operating Position		Movement Differential		Overtravel	
		Maximum (N)	(ozf)	Minimum (N)	(ozf)	Maximum (mm)	(in)	(mm)	(in)	Maximum (mm)	(in)	(mm)	(in)
Plunger	3BR103 3BR/510	7.2	26.00	1.7	6	40.8	1.6	39.3 ± 0.4	1.55 ± 0.016	0.08	0.003	4.6	0.18



Type coding key for standard products

Basic type	3BR	Example: 3BR	SH
Environmental sealing	SH 103 510	Sealed terminals with horizontal exiting 500 mm cables Sealed to IP54 Sealed to IP67	
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.	

K5

Snap-action Microswitches

Standard

K5

- Characteristics
- double break switching
 - long mechanical life
 - high electrical rating
 - faston terminals

Rating 250 VAC, 16 A

Dimensions (mm) 41 × 19 × 15.5

- Actuator
- plunger
 - ramp plunger
 - plain lever
 - roller lever

Approvals UL, CSA



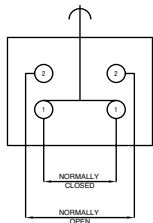
Preferred Range

Ordering Reference	Actuating Force (N) (ozf)		Sealing	Operating pos. (mm) (in)		Terminal	Circuit	Actuator	Contacts	Electrical rating
K5UL	2.8	10.00	IP40	17.4	0.68	Faston	SPDT	Plunger	Ag	Up to 250 VAC, 16 A
K5CUL	2.8	10.00	IP40	16.7	0.66	Faston	SPDT	Ramp plunger	Ag	Up to 250 VAC, 16 A
K5KUL	1.4	5.00	IP40	20.3	0.80	Faston	SPDT	Plain lever	Ag	Up to 250 VAC, 16 A
K5KRUL	1.5	5.40	IP40	32.0	1.26	Faston	SPDT	Roller lever	Ag	Up to 250 VAC, 16 A
K5QUL	2.8	10.00	IP40	17.9	0.71	Faston	SPDT	Spring plunger	Ag	Up to 250 VAC, 16 A

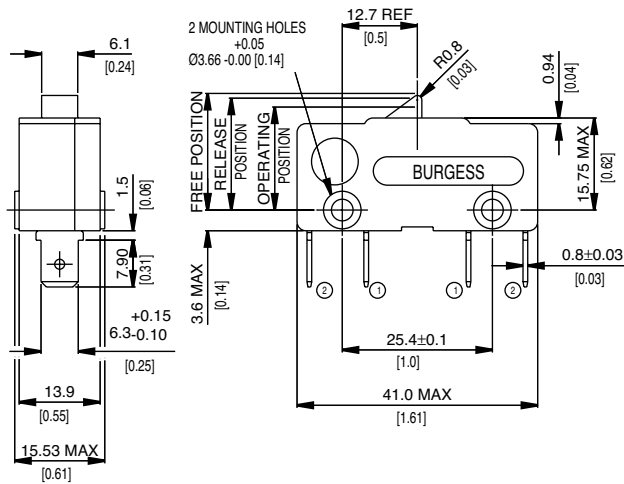
Specifications

Housing	Glass fibre reinforced nylon
Plunger	Nylon
Mechanism	Two circuit double break change-over
Contacts	Silver
Terminals	6.3 mm (0.25 in) faston
Temperature range	-10°C to +85°C
Mechanical life	10 ⁶ cycles minimum (impact free actuation)
Type of protection	IP40 (enclosure)
Mounting	Side mounting
Actuators	Plain lever – stainless steel, roller lever - stainless steel, nylon roller

Circuit diagram



Dimensions



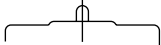
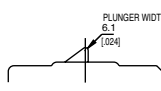
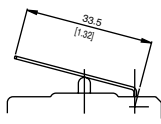
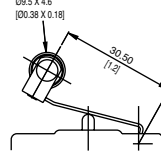
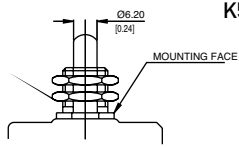
Recommended maximum electrical ratings

Voltage (max)	Load (A)	Horsepower	Approval
250 VAC	16 (0.75 pf)		UL 1054/CSA 22.2 No. 55 - 6,000 operations
125 VAC	16 (0.75 pf)		UL 1054/CSA 22.2 No. 55 - 6,000 operations
250 VAC		¼ HP	UL 1054 6,000 operations
125 VAC		¼ HP	UL 1054 6,000 operations
0 - 15 VDC	15		General rating - 50,000 operations
15 - 30 VDC	10		General rating - 50,000 operations

Values shown are recommended maximum ratings for single circuit switching

K5

Operating Characteristics

Actuator	Reference	Actuating Force		Release Force		Free Position Maximum		Operating Position		Movement Differential Maximum		Overtravel	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Plunger 	K5UL	2.8	10.00	1.1	4	19.7	0.78	17.4 ± 0.7	0.68 ± 0.028	1.27	0.05	*	
Ramp plunger 	K5CUL	2.8	10.00	1.10	4.00	19.7	0.78	16.7 ± 0.7	0.66 ± 0.028	2.2	0.09	*	
Plain lever 	K5KUL	1.4	5.00	0.35	1.25	28.0	1.10	20.3 ± 1.5	0.80 ± 0.06	3.2	0.13	*	
Roller lever 	K5KRUL	1.5	5.40	0.38	1.28	38.6	1.52	32.0 ± 1.5	1.26 ± 0.06	3.2	0.13	*	
Spring plunger 	K5QUL	2.8	10.00	1.10	4.00	20.6	0.81	17.9 ± 0.7	0.71 ± 0.028	1.27	0.05	4.6	0.18

* Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic type	K5	Example: K5	C	UL
Actuators	<ul style="list-style-type: none"> No symbol, plain plunger C Ramp plunger K Plain lever 33.5 mm KR Roller lever 30.5 mm Q Spring plunger 			
Approvals	UL	UL and CSA approval		
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<p>Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.</p>		



Switches

	Type	Preferred Products	Preferred Products	Page
Snap-action, Metal housed	V3S	V3SUL V3SYRUL V3SYR1UL V3SY1UL		114
	V9N	V9N V9NLR V9NLR1 V9NL V9NML V9NV	V9NLRV V9NLR1V V9NLV V9NMLV V9NMRV V9NMLRV	117
	4BR	4BR 4BR510		121
	4CR	4CRQ 4CRQR		124
	M9 C9	M9CTQMSUL M9CTQMSAUL M9CTQMSFUL C9CTQMSUL C9CTQMSAUL C9CTQMSFUL		127
	M2V3 C2V3	M2V3HM6SUL M2V3HM6SFUL M2V3HM6SAUL M2V3HM6SLRUL M2V3HM6SRAUL C2V3HM6SUL C2V3HM6SFUL C2V3HM6SAUL C2V3HM6SLRUL C2V3HM6SRAUL		130

V3S

Snap-action

Plastic housed

V3S

Characteristics	<ul style="list-style-type: none">■ sealed (IP67)■ flying leads■ robust construction
Rating	250 VAC, 5 A
Dimensions (mm)	32 × 24 × 10
Actuator	<ul style="list-style-type: none">■ plunger■ plain levers■ roller levers
Approvals	UL, CSA, ENEC



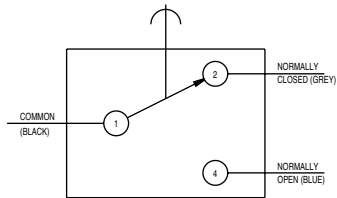
Preferred Range

Ordering Reference	Actuating Force (N)	Actuating Force (ozf)	Sealing	Operating pos.		Terminal	Circuit	Actuator	Contacts	Electrical rating
				(mm)	(in)					
V3SUL	3.9	14.00	IP67	14,5	0.57	Pre-wired	CO	Plunger	Ag	Up to 250 VAC, 5 A
V3SYRUL	3.9	14.00	IP67	20,4	0.80	Pre-wired	CO	Roller lever - short	Ag	Up to 250 VAC, 5 A
V3SYR1UL	2.3	8,26	IP67	22,0	0.86	Pre-wired	CO	Roller lever - long	Ag	Up to 250 VAC, 5 A
V3SY1UL	1.7	7,50	IP67	14,9	0.55	Pre-wired	CO	Plain lever	Ag	Up to 250 VAC, 5 A

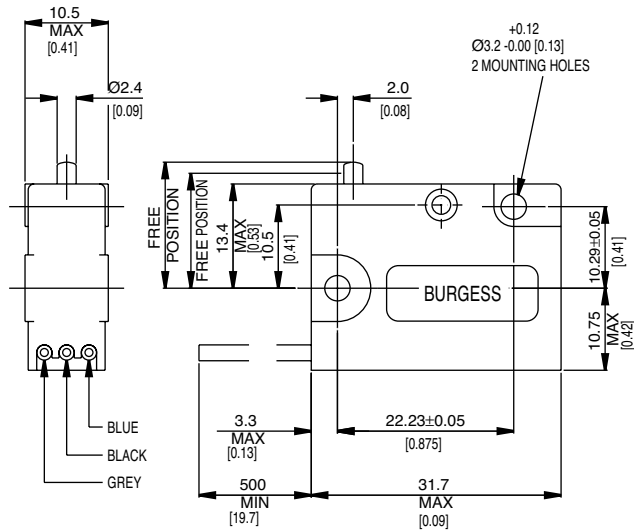
Specifications

Housing	Glass fibre reinforced nylon
Plunger	Acetal (lever types), stainless steel (plunger types)
Mechanism	Snap-action, single pole
Functions	Change-over
Cowl	Silicone rubber
Contacts	Silver
Terminals °C	Pre-wired
Temperature range	-40°C to +85°C
Mechanical life	10 ⁶ cycles minimum, impact-free actuation
Protection	IP67 (enclosure)
Mounting	Side mounting
Actuators	Plain lever - stainless steel, Roller levers - stainless steel, nylon roller

Circuit diagram



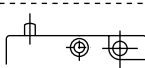
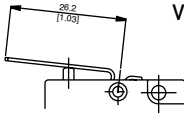
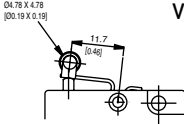
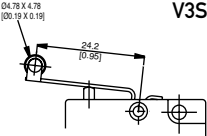
Dimensions



Recommended maximum electrical ratings

Voltage (max)	Load (A)	Approval
125 VAC	5 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations (85° C)
250 VAC	5 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations (85° C)
250 VAC	5	EN61058-1, T85, 10,000 operations
0 - 15 VDC	6	General rating - 50,000 operations (85° C)
15 - 30 VDC	3	General rating - 50,000 operations (85° C)

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential Maximum	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Plunger 	V3SUL	3.90	14.0	1.10	4.00	15.9	0.63	14.5 ± 0.5	0.57 ± 0.02	0.4	0.016
Plain lever 	V3SY1UL	3.90	14.0	1.10	4.00	22.1	0.87	20.4 ± 0.64	0.8 ± 0.025	0.4	0.016
Roller lever - short 	V3SYRUL	2.30	8.3	0.40	1.44	24.8	0.98	22.0 ± 1.2	0.86 ± 0.047	1.00	0.040
Roller lever - long 	V3SYR1UL	1.65	7.5	0.42	1.50	18.1	0.71	14.9 ± 0.10	0.55 ± 0.039	1.00	0.040

Over travel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic type	V3S	Example: V3S	C2	Y1	GP	UL
Circuit	No symbol, change-over C2 Normally closed C4 Normally open					
Actuators	No symbol, without lever or actuator Y1 Plain lever 26.2 mm YR Roller lever 11.7 mm YR1 Roller lever 24.2 mm					
Contact Material	No symbol, Ag GP Gold plate on silver (GP)					
Terminals	No symbol, fitted with standard 500 mm cables					
Approvals	No symbol, without approval UL UL and CSA approval					
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.					

V9N

Snap-action

Metal housed

V9N

Characteristics	<ul style="list-style-type: none"> ■ sealed (IP67) ■ metal housed ■ screw terminals or flying leads
Rating	250 VAC, 10 A max.
Dimensions (mm)	42 × 24.5 × 16
Actuator	<ul style="list-style-type: none"> ■ plunger ■ plain levers ■ reverse action levers ■ roller levers
Approvals	UL and CSA



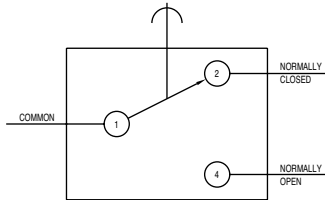
Preferred Range

Ordering Reference	Actuating Force (N)	Actuating Force (ozf)	Sealing	Operating pos. (mm)	Operating pos. (in)	Terminal	Circuit	Actuator	Contacts	Electrical rating
V9N	5.5	19.80	IP67	21.3	0.840	M3 screw	CO	Plunger	Ag	Up to 250 VAC, 10 A
V9NLR	6.0	21.60	IP67	27.5	1.080	M3 screw	CO	Roller lever - short	Ag	Up to 250 VAC, 10 A
V9NLR1	4.5	16.20	IP67	34.5	1.360	M3 screw	CO	Roller lever - long	Ag	Up to 250 VAC, 10 A
V9NL	3.0	10.80	IP67	24.7	0.970	M3 screw	CO	Plain lever	Ag	Up to 250 VAC, 10 A
V9NML	4.5	16.20	IP67	23.6	0.930	M3 screw	CO	Reverse action lever - long	Ag	Up to 250 VAC, 10 A
V9NV	5.5	19.80	IP67	21.3	0.840	Pre-wired	CO	Plain plunger	Ag	Up to 250 VAC, 10 A
V9NLRV	6.0	21.60	IP67	27.5	1.080	Pre-wired	CO	Roller lever - short	Ag	Up to 250 VAC, 10 A
V9NLR1V	4.5	16.20	IP67	34.5	1.360	Pre-wired	CO	Roller lever - long	Ag	Up to 250 VAC, 10 A
V9NLV	3.0	10.80	IP67	24.7	0.970	Pre-wired	CO	Plain lever	Ag	Up to 250 VAC, 10 A
V9NMLV	4.5	16.20	IP67	23.6	0.930	Pre-wired	CO	Reverse action lever - long	Ag	Up to 250 VAC, 10 A
V9NMRV	9.5	34.20	IP67	32.9	1.295	Pre-wired	CO	Reverse action roller lever - short	Ag	Up to 250 VAC, 10 A
V9NMLRV	5.0	18.00	IP67	34.0	1.340	Pre-wired	CO	Reverse action roller lever - long	Ag	Up to 250 VAC, 10 A

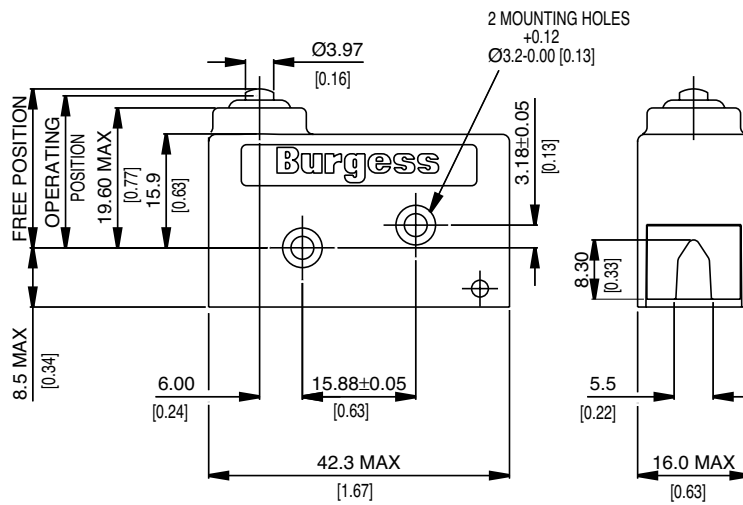
Specifications

Housing	Zinc diecasting
Plunger	Acetal
Mechanism	Snap-action, single pole
Functions	Change-over
Cowl	Silicon rubber
Contacts	Silver
Terminals	M3 screws with captive washers or pre-wired
Temperature range	-40°C to +125°C, switch only -10°C to +85°C pre-wired
Mechanical life	10 ⁶ cycles minimum, impact-free actuation
Protection	IP67 (enclosure)
Mounting	Side mounting
Actuators	Plain levers - stainless steel, roller levers - stainless steel, nylon roller

Circuit diagram



Dimensions


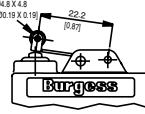
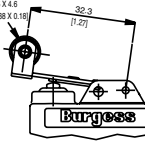
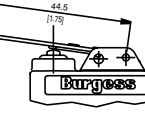
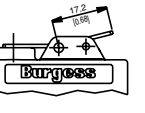
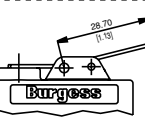
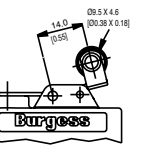
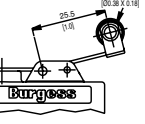


Recommended maximum electrical ratings

Voltage (max)	Load (A)	Approval
250 VAC	10 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations (85°C)
0 - 15 VDC	10	General rating - 50,000 operations (85°C)
15 - 30 VDC	10	General rating - 50,000 operations (85°C)

V9N

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential		Over travel Maximum	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Plunger 	V9N	5.5	19.8	1.0	3.6	22.6	0.89	21.3 ± 0.3	0.84 ± 0.012	0.35	0.014	*	
Roller lever - short 	V9NLR	6.0	21.6	1.3	4.7	31.0	1.22	27.5 ± 0.5	1.08 ± 0.02	0.35	0.014	*	
Roller lever - long 	V9NLR1	4.5	16.2	0.8	2.9	39.0	1.54	34.5 ± 0.7	1.36 ± 0.028	0.60	0.024	*	
Plain lever 	V9NL	3.0	10.8	0.6	2.1	31.0	1.22	24.7 ± 0.10	0.97 ± 0.039	0.70	0.028	*	
Reverse action lever - short 	V9NM	7.5	27.0	1.5	5.4	26.0	1.02	22.4 ± 0.5	0.88 ± 0.02	0.50	0.020	3.50	0.137
Reverse action lever - long 	V9NML	4.5	16.2	1.0	3.6	29.0	1.14	23.6 ± 0.10	0.93 ± 0.039	1.20	0.047	6.00	0.236
Reverse action roller lever - short 	V9NMR	9.5	34.2	1.5	5.4	36.0	1.42	32.9 ± 0.5	1.295 ± 0.02	0.45	0.018	2.00	0.079
Reverse action roller lever - long 	V9NMLR	5.0	18.0	1.0	3.6	39.5	1.56	34.0 ± 0.10	1.34 ± 0.039	1.00	0.039	5.50	0.216

Operating characteristics are specified from lower mounting hole

* Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic typ	V9N	Example: V9N	L	H
Actuators	No symbol, without lever			
L	Plain lever 44.5 mm			
LE	Reverse-action lever with uni-directional roller 32.3 mm			
LR	Roller lever 22.2 mm			
LR1	Roller lever 32.3 mm			
M	Reverse action lever 187.2 mm			
ML	Reverse action lever 28.7 mm			
MR	Reverse action roller lever 14.0 mm			
MLR	Reverse action roller lever 25.5 mm			
Terminals	No symbol, unwired			
H	Horizontal pre-wired cable			
V	Vertical pre-wired cable			
Pre-wired with Terminals H + V	No symbol, 1 m cable			
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.		

4BR

Snap-action

Metal housed

4BR

- Characteristics
- choice of IP54 or IP67 sealed versions
 - precise movements and exceptional repeat accuracy
 - robust metal housing
 - flying lead version available
 - long overtravel

Rating 250 VAC, 15 A max.

Dimensions (mm) 53,1 × 20,6 × 29,2

Actuator ■ plunger

Approvals UL, CSA



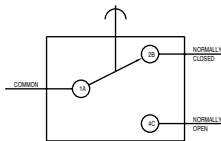
Preferred Range

Ordering Reference	Actuating Force		Sealing	Operating pos.		Terminal	Circuit	Actuator	Contacts	Electrical rating
	(N)	(ozf)		(mm)	(in)					
4BR	7,2	26,00	IP54	39,3	1,550	Screw	CO	Plunger	Ag	Up to 250 VAC, 15 A
4BR510	7,2	26,00	IP67	39,3	1,550	Screw	CO	Plunger	Ag	Up to 250 VAC, 15 A

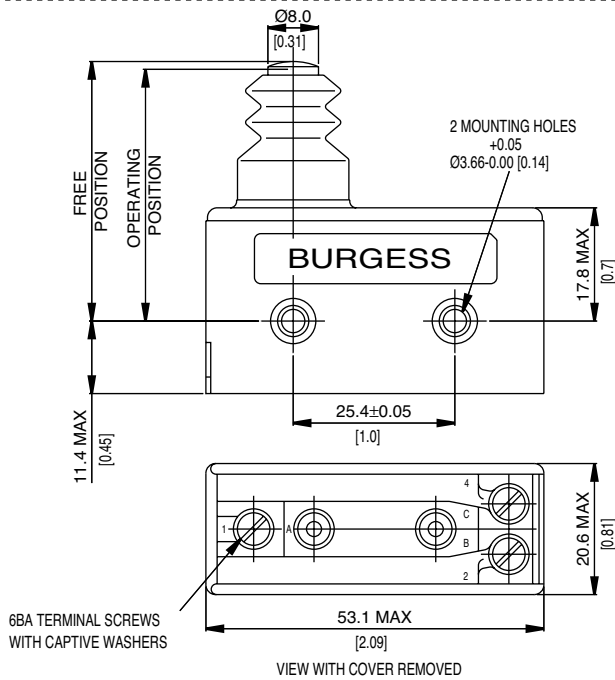
Specifications

Housing	Zinc based alloy
Base Plate	Phenolic
Plunger	Stainless steel
Cowl	Silicon rubber
Mechanism	Single pole change-over
Contacts	Silver
Terminals	Removable screw terminals, insulated cover plate
Temperature	-10°C to +85°C
Mechanical life	10 ⁶ cycles minimum (impact free actuation)
Protection	4BR/510 IP67 / 4BR IP54 (enclosure)
Mounting	Side mounting

Circuit diagram



Dimensions

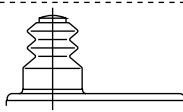


Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
250 VAC	15 (0.75 pf)	5	-	CSA 22.2 No. 55 - 6,000 operations
125 VAC	10 (0.75 pf)	-	-	CSA 22.2 No. 55 - 6,000 operations
250 VAC	-	-	¼ HP (0.45 pf)	CSA 22.2 No. 55 - 6,000 operations
125 VAC	-	-	¼ HP (0.45 pf)	CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	10	-	-	General rating - 50,000 operations
15 - 30 VDC	5	-	-	General rating - 50,000 operations

4BR

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential Maximum		Over travel	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Plunger 	4BR	7.2	26.00	1.7	6	40.8	1.6	39.3 ± 0.4	1.55 ± 0.016	0.08	0.003	4.6	0.18
	4BR/510	7.2	26.00	1.7	6	40.8	1.6	39.3 ± 0.4	1.55 ± 0.016	0.08	0.003	4.6	0.18

Type coding key for standard products

Basic type	4BR	Example: 4BR	SH
Environmental sealing	SH 103 510	Sealed terminals with horizontal exiting 500 mm cables Sealed to IP54 Sealed to IP67	
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.	

4CR

Snap-action

Metal housed

4CR

- Characteristics
- precise movements and exceptional repeat accuracy
 - robust metal housing
 - screw terminals
 - single hole mounting
 - long overtravel

Rating 250 VAC, 15 A max.

Dimensions (mm) 53.1 × 20.6 × 30.8

- Actuator
- spring plunger
 - spring plunger with in-line roller

Approvals UL, CSA



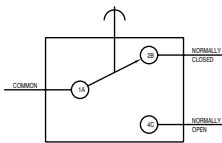
Preferred Range

Ordering Reference	Actuating Force		Sealing	Operating pos.		Terminal	Circuit	Actuator	Contacts	Electrical rating
	(N)	(ozf)		(mm)	(in)					
4CRQ	2.8	10.00	IP40	21.0	0.830	Screw	CO	Spring plunger	Ag	Up to 250 VAC, 15 A
4CRQR	2.8	10.00	IP40	21.0	0.830	Screw	CO	In-line roller	Ag	Up to 250 VAC, 15 A

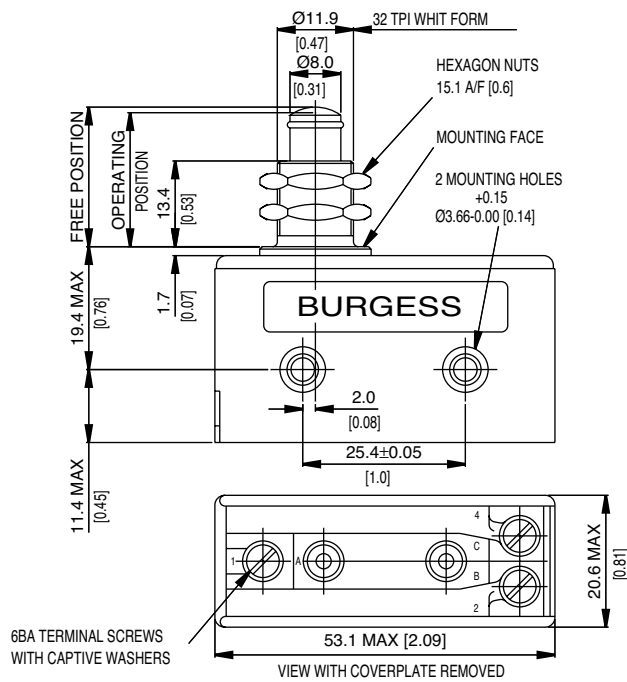
Specifications

Housing	Zinc base alloy
Base Plate	Phenolic
Plunger	Mild steel
Mechanism	Single pole change-over
Contacts	Silver
Terminals	Removable screw terminals, insulated cover plate
Temperature	-10°C to +85°C
Mechanical life	10 ⁶ cycles minimum (impact free actuation)
Protection	IP40 (enclosure)
Mounting	Panel or side mounting

Circuit diagram



Dimensions



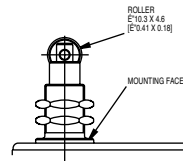
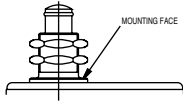
Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
250 VAC	15 (0.75 pf)	5	-	CSA 22.2 No. 55 - 6,000 operations
125 VAC	10 (0.75 pf)	-	-	CSA 22.2 No. 55 - 6,000 operations
250 VAC	-	-	¼ HP (0.45 pf)	CSA 22.2 No. 55 - 6,000 operations
125 VAC	-	-	¼ HP (0.45 pf)	CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	10	-	-	General rating - 50,000 operations
15 - 30 VDC	5	-	-	General rating - 50,000 operations

4CR

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Movement Differential Maximum		Over travel	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Spring plunger	4CRQ	2.8	10.00	1.1	4	21.8	0.85	21.0 ± 0.7	0.83 ± 0.028	0.05	0.002	3.56	0.14
Spring plunger with in-line roller	4CRQR	2.8	10.00	1.1	4	30.1	1.19	29.0 ± 0.7	1.16 ± 0.028	0.05	0.002	3.56	0.14



Type coding key for standard products

Basic type	4CR	Example: 4CR	Q
Actuators	Q QR QR2	Plain plunger Plunger with in-line roller Plunger with across-line roller	
Special Features	/ □ □ □ □	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.	

M9 / C9

Snap-action

Metal housed

M9 / C9

- Characteristics
- sealed (IP67)
 - internal earth (ground) screw provided
 - trident spring mechanism for precise movements
 - hazardous area option (ATEX)

Rating 250 VAC, 15 A max.

Dimensions (mm) 76.7 × 45.8 × 26

- Actuator
- spring plunger
 - adjustable roller lever
 - wobble stick

Approvals UL, CSA, ATEX



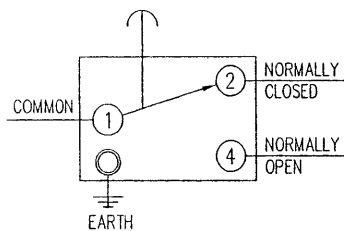
Preferred Range

Ordering Reference	Actuating Force (N) (ozf)		Sealing	Operating pos. (mm) (in)		Terminal	Circuit	Actuator	Contacts	Electrical rating
M9CTQMSUL	6.7	24.0	IP67	38.6	1.52	Screw/washer	CO	Spring plunger	Ag	Up to 250 VAC, 15 A
M9CTQMSAUL	5.6	20.0	IP67			Screw/washer	CO	Roller lever	Ag	Up to 250 VAC, 15 A
M9CTQMSFUL	1.5	5.5	IP67			Screw/washer	CO	Wobble stick actuator	Ag	Up to 250 VAC, 15 A
C9CTQMSUL	6.7	24.0	IP67	38.6	1.52	Screw/washer	CO	Spring plunger	Ag	Up to 250 VAC, 15 A
C9CTQMSAUL	5.6	20.0	IP67			Screw/washer	CO	Roller lever	Ag	Up to 250 VAC, 15 A
C9CTQMSFUL	1.5	5.5	IP67			Screw/washer	CO	Wobble stick actuator	Ag	Up to 250 VAC, 15 A

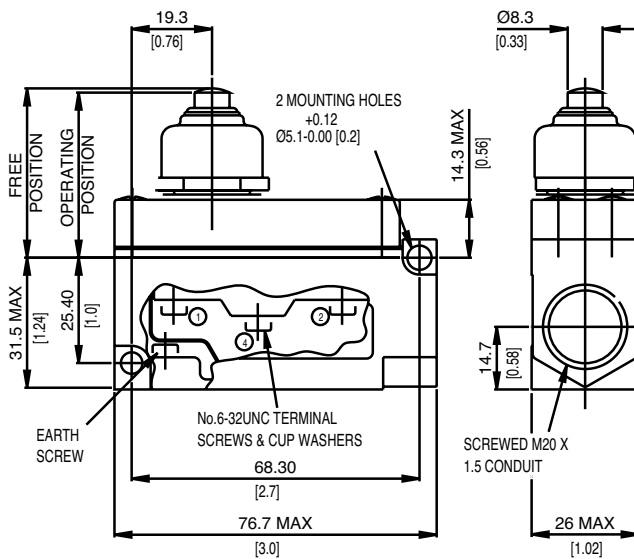
Specifications

Housing	Aluminium alloy
Plunger	Stainless steel (synthetic rubber cowl)
Mechanism	Single pole change-over
Contacts	Silver
Terminals	6-32 UNC screws and cup washers
Temperature range °C	-10°C to +85°C
Mechanical life	10 ⁵ cycles minimum (impact free actuation)
Protection	IP 67 - (enclosure) - providing conduit entry sealed on installation
Mounting	Side mounting
Actuators	Roller lever - mild steel zinc-plated, nylon roller Wobble stick - spring steel wire

Circuit diagram



Dimensions



Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
250 VAC	15 (0.75 pf)	15	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
125 VAC	16 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	15	-	-	General rating - 50,000 operations
15 - 30 VDC	10	-	-	General rating - 50,000 operations

Operating Characteristics

Actuator	Reference	Actuating Force		Release Force		Free Position		Operating Position		Movement Differential		Over travel	
		Maximum (N)	(ozf)	Minimum (N)	(ozf)	Maximum (mm)	(in)	(mm)	(in)	Maximum (mm)	(in)	Maximum (mm)	(in)
Spring plunger	M9CTQMSUL C9CTQMSUL	6.7	24.00	1.7	6.0	40.5	1.59	38.6 ± 1.2	1.52 ± 0.047	0.08	0.003	4.6	0.18
Roller lever	M9CTQMSAUL C9CTQMSAUL	5.6	20.00	1.7	6.0	Pre-travel 10° maximum		Adjustable	0.5°			6.5°	
Wobble stick	M9CTQMSFUL C9CTQMSFUL	1.5	5.50					30	1.18			(movement to operate)	

Type coding key for standard products

Basic type	M9 / C9	Example: M9CT	A	UL
Conduit entry	M9CT C9CT	M20/20 mm ISO thread ½ in NPS thread		
Actuators	A F	No symbol, spring plunger Rotary lever Wobble stick actuator		
Approvals	UL	No symbol, without approval UL and CSA approval		
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.		

M2V3 / C2V3

Snap-action

Metal housed

M2V3 / C2V3

Characteristics	<ul style="list-style-type: none"> ■ sealed (IP65) ■ contains two electrically independent change-over switches ■ rotary action levers can be mounted in four different positions and then adjusted through 360°
Rating	250 VAC, 10 A max.
Dimensions (mm)	66.9 × 38.3 × 30.2
Actuator	<ul style="list-style-type: none"> ■ spring plunger ■ roller levers ■ rod lever ■ wobble stick
Approvals	UL, CSA



Preferred Range

Ordering Reference	Actuating Force (N)	Actuating Force (ozf)	Sealing	Operating pos. (mm) (in)		Terminal	Circuit	Actuator	Contacts	Electrical rating
M2V3HM6S	14.5	52.00	IP65	57.1	2.25	Screw/washer	2 CO	Spring plunger	Ag, AgCdO	Up to 250 VAC, 10 A
M2V3HM6SF	1.5	5.40	IP65			Screw/washer	2 CO	Wobble stick actuator	Ag, AgCdO	Up to 250 VAC, 10 A
C2V3HM6SUL	14.5	52.00	IP65	57.1	2.25	Screw/washer	2 CO	Spring plunger	Ag, AgCdO	Up to 250 VAC, 10 A
C2V3HM6SFUL	1.5	5.40	IP65			Screw/washer	2 CO	Wobble stick actuator	Ag, AgCdO	Up to 250 VAC, 10 A

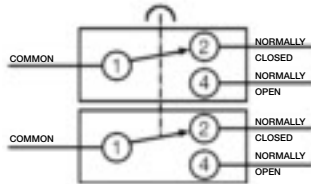
Ordering Reference	Actuating Torque (Nm) (ozf-in)		Sealing	Terminal	Circuit	Actuator	Contacts	Electrical rating
M2V3HM6SA	0.23	32.00	IP65	Screw/washer	2 CO	Rotary action roller lever	Ag, AgCdO	Up to 250 VAC, 10 A
M2V3HM6SLR	0.23	32.00	IP65	Screw/washer	2 CO	Rotary action slotted roller lever	Ag, AgCdO	Up to 250 VAC, 10 A
M2V3HM6SRA	0.23	32.00	IP65	Screw/washer	2 CO	Rotary action rod lever	Ag, AgCdO	Up to 250 VAC, 10 A
C2V3HM6SAUL	0.23	32.00	IP65	Screw/washer	2 CO	Rotary action roller lever	Ag, AgCdO	Up to 250 VAC, 10 A
C2V3HM6SLRUL	0.23	32.00	IP65	Screw/washer	2 CO	Rotary action slotted roller lever	Ag, AgCdO	Up to 250 VAC, 10 A
C2V3HM6SRAUL	0.23	32.00	IP65	Screw/washer	2 CO	Rotary action rod lever	Ag, AgCdO	Up to 250 VAC, 10 A

M2V3 / C2V3

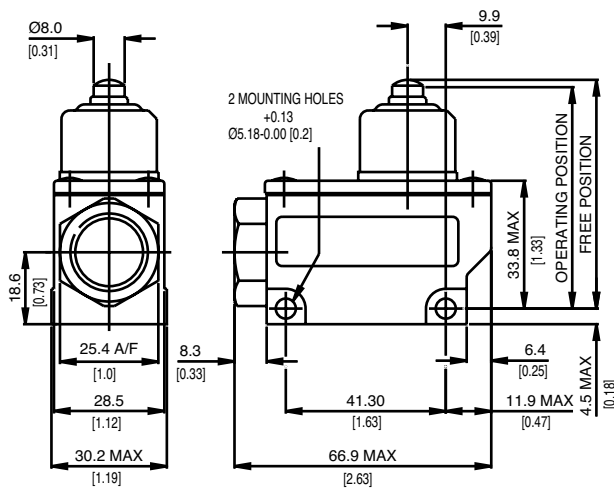
Specifications

Housing	Aluminium
Plunger	Mild steel, zinc-plated
Mechanism	2 electrically isolated single pole microswitches
Functions	Change-over - independent circuits or double pole use
Contacts	Silver, silver cadmium oxide
Terminals	M3 screws and lockwashers
Temperature range °C	-10°C to +85°C
Mechanical life	10 ⁶ cycles minimum (impact free actuation)
Protection	IP 65 (enclosure)
Mounting	Side mounting
Actuators	Roller lever - nylon, slotted roller lever - mild steel zinc-plated, nylon Rod lever - stainless steel, wobble stick - spring steel wire

Circuit diagram



Dimensions



Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
250 VAC	10 (0.75 pf)	10	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
125 VAC	-	-	1/8 HP (0.45 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	10	-	-	General rating - 50,000 operations
15 - 30 VDC	7	-	-	General rating - 50,000 operations

M2V3 / C2V3

Operating Characteristics

Actuator	Reference	Actuating Force		Release Force		Free Position		Operating Position		Movement Differential		Over travel	
		Maximum (N)	Maximum (ozf)	Minimum (N)	Minimum (ozf)	Maximum (mm)	Maximum (in)	Maximum (mm)	Maximum (in)	Maximum (mm)	Maximum (in)	Maximum (mm)	Maximum (in)
Spring plunger	M2V3HM6S C2V3HM6SUL	14.5	52.00	2.2	8.0	59.0	2.32	57.1 ±0.8	2.25 ±0.03	1.0	0.04	5.1	0.20
Wobble stick	M2V3HM6SF C2V3HM6SFUL	1.5	5.40	50 mm (1.97 in) movement to operate maximum									
Rotary roller lever	M2V3HM6SA C2V3HM6SAUL	0.23	32.0	Pre-travel 240									
Rotary slotted roller lever	M2V3HM6SLR C2V3HM6SLRUL	0.23	32.0	Adjustable		20° (min)							
Rotary rod lever	M2V3HM6SRA C2V3HM6SRAUL	0.23	32.0	Adjustable - pre-travel 240 maximum		20° (min)							

M2V3 / C2V3

Type coding key for standard products

Basic type	M2V3 / C2V3	Example:	M2V3	A	UL
Conduit entry	M2V3 C2V3	M20/20 mm ISO thread ½ in NPS thread			
Actuators	A LR RA F	No symbol, spring plunger Rotary action roller lever Rotary action slotted roller lever Rotary rod actuator Wobble stick actuator			
Approvals	UL	No symbol, without approval UL and CSA approval			C2V3 only
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.			



Switches

Door Switches, Door interlock	Type	Preferred Products	Page
Forced break	XP	XP2Z11 XP4Z11 XP5Z11 XP2E1Z11 XP42E1Z11 XP52E1Z11 XP2E2Z11	136
		XT	XTD22AZ1
Snap-action	DS	DS1UL DS3UL	142
	TPS	TPS1UL TPS2UL	145
Positive-action	KB5EQ	KB5EQULS KB5EQRULS KB5EQR2ULS	148



XP

Door Interlock

Forced break

XP

- Characteristics
- double break switching
 - positive-action force break option
 - > 3 mm contact gap at full travel option
 - faston terminals

Rating 400 VAC, 16 A

Dimensions (mm) 30 × 32 × 12

- Actuator
- plain plunger
 - mushroom plunger
 - plunger with external spring (for increased reset security)

Approvals ENEC, UL, CSA



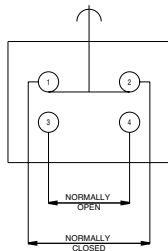
Preferred Range

Ordering Reference	Actuating Force (N)	Actuating Force (ozf)	Operating pos. (mm)	Operating pos. (in)	Terminal	Circuit	Actuator	Contacts	Electrical rating
XP2Z11	3.0	10.0	14.9	0.587	Faston	CO	Straight plunger	Ag nickel	Up to 400 VAC, 16 A
XP42Z11	1.8	6.2	14.9	0.587	Faston	NC	Straight plunger	Ag nickel	Up to 400 VAC, 16 A
XP52Z11	3.0	10.0	13.0	0.511	Faston	NO	Straight plunger	Ag nickel	Up to 400 VAC, 16 A
XP2E1Z11	6.5	23.3	14.9	0.587	Faston	CO	Mushroom plunger, reset	Ag nickel	Up to 400 VAC, 16 A
XP42E1Z11	3.8	13.4	14.9	0.587	Faston	NC	Mushroom plunger, reset	Ag nickel	Up to 400 VAC, 16 A
XP52E1Z11	6.5	23.3	13.0	0.511	Faston	NO	Mushroom plunger, reset	Ag nickel	Up to 400 VAC, 16 A
XP2E2Z11	3.0	10.0	14.9	0.587	Faston	CO	Mushroom plunger, reset	Ag nickel	Up to 400 VAC, 16 A

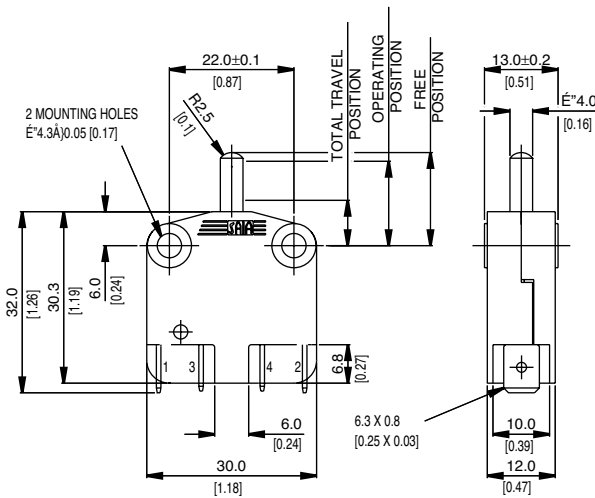
Specifications

Housing	Glass fibre reinforced nylon
Plunger	Glass fibre reinforced nylon
Mechanism	Change-over, normally open, normally closed
Contacts	Silver
Terminals	6.3 mm (0.25 in) faston brass
Temperature range °C	-20°C to +140°C
Mechanical life	10 ⁷ cycles minimum (impact free actuation)
Protection	IP40 (enclosure)
Mounting	Screw mounting
Actuators	Straight or mushroom plunger
Special features	Optional reset spring for increased reset security

Circuit diagram



Dimensions

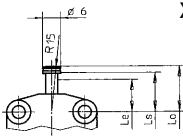
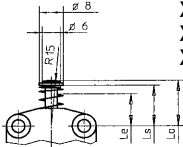
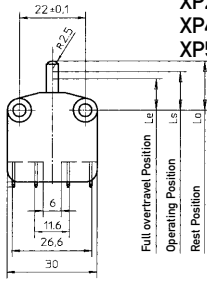


Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
250 VAC	16 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
125 VAC	-	-	¼ HP (0.45 pf)	UL 1054 - Horsepower- 6,000 operations
250 VAC	-	-	¼ HP (0.45 pf)	UL 1054 - Horsepower- 6,000 operations
250 VAC	16	6	-	EN.60158-1 T85 (°C) 50,000 operations
400 VAC	16	4	-	EN.60158-1 T85 (°C) 10,000 operations
0-15 VDC	10	-	-	General rating - 50,000 operations
15-30 VDC	7	-	-	General rating - 50,000 operations

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Total Travel Position Maximum		Over travel	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Straight plunger	XP2Z11	3.00	10.0	5.5	19.7	15.3	0.602	14.9 ± 0.4	0.587 ± 0.016	8.0	0.315	4.5	0.177
	XP42Z11	1.75	6.20	5.5	19.7	15.3	0.602	14.9 ± 0.4	0.587 ± 0.016	8.0	0.315	6.5	0.256
	XP52Z11	3.00	10.0	5.5	19.7	16.6	0.653	13.0 ± 0.4	0.511 ± 0.016	8.0	0.315	4.5	0.177
Mushroom plunger with reset spring	XP2E1Z11	6.5	23.3	9.0	32.3	15.3	0.602	14.9 ± 0.4	0.587 ± 0.016	10.5	0.413	2.1	0.082
	XP42E1Z11	3.75	13.4	9.0	32.3	15.3	0.602	14.9 ± 0.4	0.587 ± 0.016	10.5	0.413	4.0	0.157
	XP52E1Z11	6.5	23.3	9.0	32.3	16.6	0.653	13.0 ± 0.4	0.511 ± 0.016	10.5	0.413	2.1	0.082
Mushroom plunger	XP2E2Z11	3.0	10.0	5.5	19.7	15.3	0.602	14.9 ± 0.4	0.587 ± 0.016	8.6	0.339	4.0	0.157



Type coding key for standard products

Basic type	XP XPS	Momentary Positive action forced break (normally closed only)	Example: XP	2	2	E1	Z11
Circuit	2 4 5	Change-over Normally closed Normally open					
Terminals	2	Faston 6.3 × 0.8					
Actuators	E1 E2	No symbol, straight plunger Mushroom plunger with reset spring Mushroom plunger					
Approvals	Z11	UL, cUL, CSA and ENEC					

XT

Door Interlock

Forced break

XT

Characteristics	■ 8 mm contact gap, creepage and clearance distances ■ double break contacts
Rating	400 VAC, 16,5 A max.
Dimensions (mm)	30 × 32 × 12
Actuator	■ shrouded plunger ■ optional key ■ plain plunger
Approvals	UL, cUL, CSA, ENEC



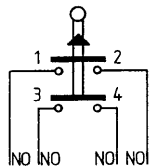
Preferred Range

Ordering Reference	Actuating Force		Operating pos.		Terminal	Circuit	Actuator	Contacts	Electrical rating
	(N)	(ozf)	(mm)	(in)					
XTD22AZ1	3,8	13,6	13,0	0,511	Faston	NO	Plunger	Ag nickel	Up to 400 VAC, 16.5 A

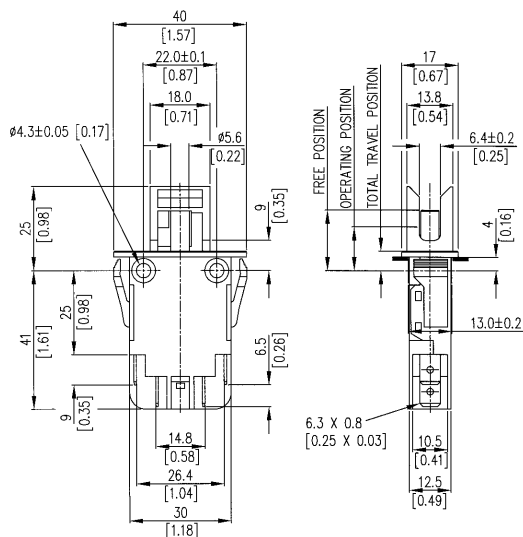
Specifications

Housing	Glass fibre reinforced polyester
Plunger	Glass fibre reinforced polyester
Mechanism	Normally open
Contacts	Silver nickel
Terminals	6.3 mm (0.25 in) faston - brass
Temperature range °C	-20°C to +85°C
Mechanical life	10 ⁶ cycles minimum (impact free actuation)
Protection	IP40 (enclosure)
Mounting	Snap-on or screw mounting
Actuator	Plunger (can be held depressed for maintenance with optional key shrouded option only)
Accessories	Maintenance key N41784 and multiplug housing XTMHSG

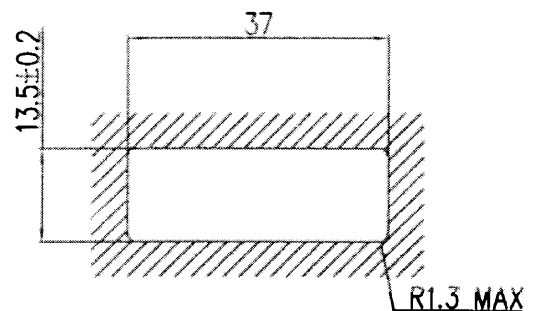
Circuit diagram



Dimensions



SNAP MOUNTING DETAILS



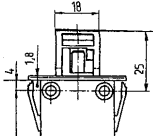
PANEL THICKNESS 1.0 – 2.5

Recommended maximum electrical ratings

Voltage (max)	Load (A)	Inductive load	Horsepower	Approval
125 VAC	15.5 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 100,000 operations
250 VAC	15.5 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 100,000 operations
125 VAC	-	-	½ HP (0.45 pf)	UL 1054 - Horsepower- 100,000 operations
250 VAC	-	-	½ HP (0.45 pf)	UL 1054 - Horsepower- 100,000 operations
125 VAC	-	-	1½ HP (0.45 pf)	UL 1054 - Horsepower- 100,000 operations
250 VAC	-	-	1½ HP (0.45 pf)	UL 1054 - Horsepower- 100,000 operations
30 VAC	0.5	-	-	EN.60158-1 T85 (°C) 50,000 operations
400 VAC	16.5	8	-	EN.60158-1 T85 (°C) 50,000 operations
30 VDC	0.5	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Release Force Minimum		Free Position Maximum		Operating Position		Total Travel Position Maximum		Over travel	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Plunger	XTD22AZ1	3,8	13,600	5,8	20,8	18,0	0,708	13,0 ± 0,4	0,511 ± 0,016	10,0	0,394	3,0	0,118
		(± 0,5)	(± 3,5)										
								12,6	0,496				
								(main contact)					
								(low voltage contact)					



Type coding key for standard products

Basic type	XTD		Example: XTD	22	J	AZ1
Terminals	22	6.3 × 0.8 mm faston terminals				
	66	4.8 × 0.5 mm faston terminals				
Form	–	Without identification: snap-on mounting with shroud				
	J	Snap-on mounting without shroud				
	P	Without shroud, without snap-on mounting				
	K					
Approvals	AZ1	UL, cUL, CSA and ENEC				

DS

Door Interlock

Snap-action

DS

Characteristics	<ul style="list-style-type: none">■ enclosed snap-action switching■ long overtravel■ tapped plunger■ screw terminals
Rating	250 VAC, 15 A
Dimensions (mm)	48 × 51 × 16
Actuator	■ plain spindle plunger
Approvals	UL, CSA



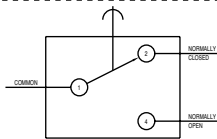
Preferred Range

Ordering Reference	Actuating Force (N)	Actuating Force (ozf)	Sealing	Operating pos. (mm)	Operating pos. (in)	Terminal	Circuit	Actuator	Contacts	Electrical rating
DS1UL	13.3	48.0	IP40	6	0.580	Solder	CO	Plunger	Ag	Up to 250 VAC, 15 A
DS3UL	13.3	48.0	IP40	6	0.580	Solder	CO	Plunger	Ag	Up to 250 VAC, 15 A

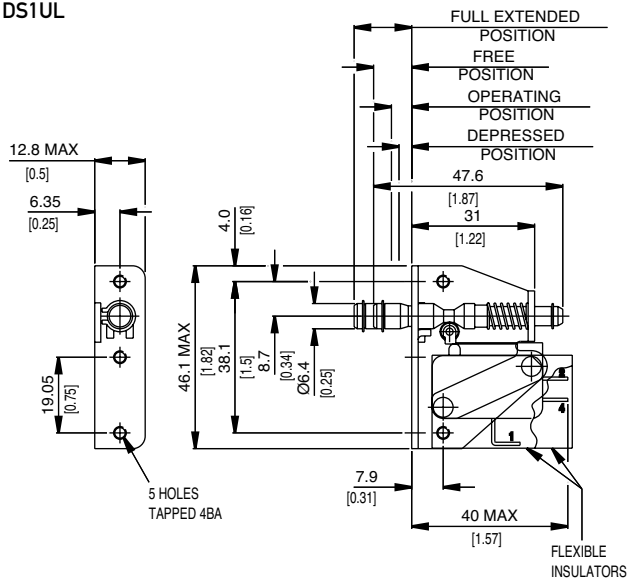
Specifications

Housing	DS3UL only - Flame retardant polycarbonate
Base plate	Mild steel, zinc-plated
Plunger	Stainless steel
Mechanism	Single pole change-over
Contacts	Silver
Terminals	Solder tags - Silver-plated brass - common (1), Brass - normally closed (2), normally open (4)
Temperature range	-10°C to +85°C
Mechanical life	10 ⁶ cycles minimum (impact free actuation)
Type of protection	IP40 (enclosure)

Circuit diagram



Dimensions DS1UL

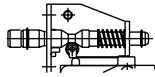


Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
250 VAC	15 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	10	-	-	General rating - 50,000 operations
15 - 30 VDC	7	-	-	General rating - 50,000 operations

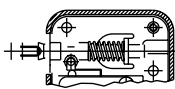
Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Free Position Maximum		Operating Position Maximum		Fully extended Position Maximum		Depressed Position Maximum	
		(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Spring Plunger	DS1UL	13,3	48,00	10,5	0,41	6	0,23	14,5	0,58	3,2	0,14



Overtravel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Spring Plunger	DS3UL	13,3	48,00	10,5	0,41	6	0,23	14,5	0,58	3,2	0,14
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Overtravel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

For the convenience of maintenance engineers who must have full working conditions with the door open, DS units are fitted with a lock-on device which overrides the interlock while working. When the door is open, the plunger can be moved down and out to an extended position which will cause the switches to operate. At the conclusion of the maintenance work, full interlock facilities are restored automatically when the door is closed.

Type coding key for standard products

Basic type	DS	Example: DS	1	UL
Switch variants	1	Open bracket type using one miniature type insert switch		
	3	plastic housing		
Approvals	UL	UL and CSA approved		

TPS

Door Interlock

Snap-action

TPS

- Characteristics
- snap-action switching
 - enclosed design
 - long overtravel
 - adjustable operating position
 - screw terminals

Rating 250 VAC, 15 A

Dimensions (mm) 54 × 50 × 18

Actuator ■ plain spindle plunger

Approvals UL, CSA



Preferred Range

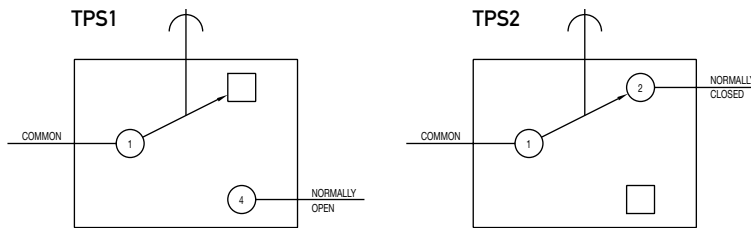
Ordering Reference	Sealing	Operating pos.	Terminal	Circuit	Actuator	Contacts	Electrical rating
TPS1UL	IP40	Adjustable	Screws	NO	Plunger	Ag	Up to 250 VAC, 15 A
TPS2UL	IP40	Adjustable	Screws	NC	Plunger	Ag	Up to 250 VAC, 15 A

TPS

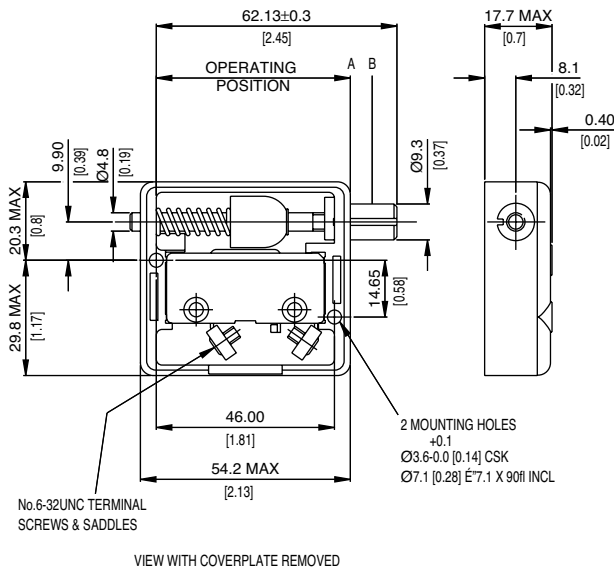
Specifications

Housing	Polycarbonate
Plunger	Polycarbonate
Mechanism	Single pole - TPS1 - normally open, TPS2 - normally closed
Contacts	Silver
Terminals	6-32 UNC screws with clamps - brass
Temperature range	-10°C to +85°C
Mechanical life	10 ⁶ cycles minimum
Type of protection	IP40 (enclosure)

Circuit diagram



Dimensions



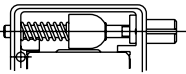
Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
125 VAC	15 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
250 VAC	15 (0.75 pf)	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	15	-	-	General rating - 50,000 operations
15 - 30 VDC	10	-	-	General rating - 50,000 operations

TPS

Operating Characteristics

Actuator	Reference	Operating Position	Depressed Position Maximum
Spring Plunger	TPS1 TPS2	Adjustable by 6.35 mm (0.25 in) from position A 49.8 mm (1.96 in) to position B	Plunger can be depressed flush with housing. The housing should not be used as an end stop.



Type coding key for standard products

Basic type	TPS	Example: TPS	1	UL
Circuit	1 2	Normally open Normally closed		
Approvals	UL	No symbol, without approval UL and CSA approval		
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.		

KB5EQ

Door Interlock

Positive-action

KB5EQ

Characteristics ■ positive-action forced double break switching
■ > 3 mm contact gap
■ enclosed design
■ long overtravel
■ screw terminals

Rating 250 VAC, 25 A

Dimensions (mm) 54 × 50 × 17.5

Actuator ■ plunger
■ plunger roller

Approvals UL, CSA



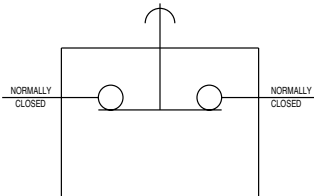
Preferred Range

Ordering Reference	Actuating Force (N)	Actuating Force (ozf)	Sealing	Operating pos (mm) (in)		Terminal	Circuit	Actuator	Contacts	Electrical rating
KB5EQULS	10.0	36.0	IP40	57.3	2.25	Screws	NC	Plunger	Ag/AgCd0	Up to 250 VAC, 20 A
KB5EQRULS	10.0	36.0	IP40	68.7	2.7	Screws	NC	Roller plunger (in line)	Ag/AgCd0	Up to 250 VAC, 20 A
KB5EQR2ULS	10.0	36.0	IP40	68.7	2.7	Screws	NC	Roller plunger (across line)	Ag/AgCd0	Up to 250 VAC, 20 A

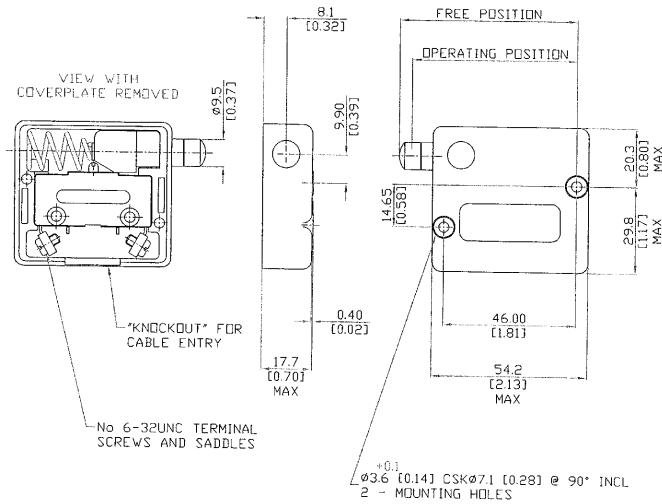
Specifications

Housing	Polycarbonate
Plunger	Mild steel, bright nickel plate
Mechanism	Single pole, double break, positive action
Functions	Normally closed
Contacts	Fixed – silver, Moving – silver cadmium oxide
Terminals	6/32 screws and clamps
Temperature range	-10°C to +85°C
Mechanical life	10 ⁶ cycles minimum, impact-free actuation
Protection	IP40 (enclosure)
Mounting	Side mounting
Actuators	Plain plunger - mild steel, bright nickel plate, roller plungers - mild steel, bright nickel plate, stainless steel roller
Approvals	UL and CSA

Circuit diagram



Dimensions

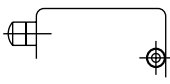
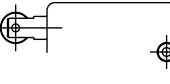
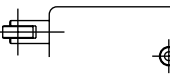


Recommended maximum electrical ratings

Voltage (max)	Load (A)	Inductive load	Horsepower	Approval
250 VAC	20 (0.75 pf)	-	-	ULS 1054/CSA 22.2 No. 55 - 100,000 operations
250 VAC	-	-	2 HP	ULS 1054 - Horsepower - 6,000 operations
125 VAC	-	-	1 HP	ULS 1054 - Horsepower - 6,000 operations
0 - 15 VDC	15	-	-	General rating - 50,000 operations
15 - 30 VDC	10	-	-	General rating - 50,000 operations

KB5EQ

Operating Characteristics

Actuator	Reference	Actuating force		Free position		Recommended operating position		Recommended contact separation		Contact gap at total travel		Total travel position	
		Maximum (N)	(ozf)	Maximum (mm)	(in)	Minimum (mm)	(in)	Minimum (mm)	(in)	Maximum (mm)	(in)	Maximum (mm)	(in)
Plunger 	KB5EQULS	10.0	36.0	61.9	2.44	57.3	2.25	2 × 1.5	2 × 0.06	2 × 3.0	2 × 0.12	*	
K Lever 	KB5EQRULS	10.0	36.0	73.7	2.90	68.7	2.70	2 × 1.5	2 × 0.06	2 × 3.0	2 × 0.12	63.2	2.48
KR Lever 	KB5EQR2ULS	10.0	36.0	73.7	2.90	68.7	2.70	2 × 1.5	2 × 0.06	2 × 3.0	2 × 0.12	63.2	2.48

Recommended minimum contact separation 2 × 1.5 mm (2 × .06) indicated when groove in plunger lines up with case. Operating characteristics are specified from mounting holes.

* Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic type	KB5EQ	Example: KB5EQ	R	ULS
Actuators	No symbol, plain plunger R Roller plunger (in line with case) R2 Roller plunger (across line of case)			
Approvals	ULS	UL 100 k operations and CSA approved		
Special Features	/ □ □ □ □	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.		

Switches

Positive break Switch	Type	Preferred Products	Page
Positive-action, Miniature	BVM3	BVM3FULS BVM3FYULS BVM3FYRULS	152
Positive action, Standard	KB5	KB5FULS KB5FKULS KB5FKRULS	155
Positive action, Standard, Metal housed	V9B	V9B V9BVC2 V9BLR V9BLRVC2 V9BLR1 V9BLR1VC2	158
Terminology			161

BVM3

Positive-action

Miniature

BVM3F

- Characteristics
- positive-action (forced break) contacts
 - > 3 mm contact gap at full travel
 - internationally recognized V3 housing
 - faston terminals

Rating 250 VAC, 10 A

Dimensions (mm) 28 × 16 × 10.5

- Actuator
- plunger
 - plain lever
 - roller lever

Approvals UL, CSA and ENEC



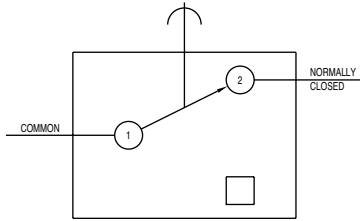
Preferred Range

Ordering Reference	Actuating Force		Sealing	Terminal	Circuit	Actuator	Contacts	Electrical rating
	(N)	(ozf)						
BVM3FULS	4.5	16.2	IP40	Faston	NC	Plunger	Ag/Ag nickel	Up to 250 VAC, 10 A
BVM3FYULS	4.5	16.2	IP40	Faston	NC	Plain lever	Ag/Ag nickel	Up to 250 VAC, 10 A
BVM3FYRULS	5.0	18.0	IP40	Faston	NC	Roller lever	Ag/Ag nickel	Up to 250 VAC, 10 A

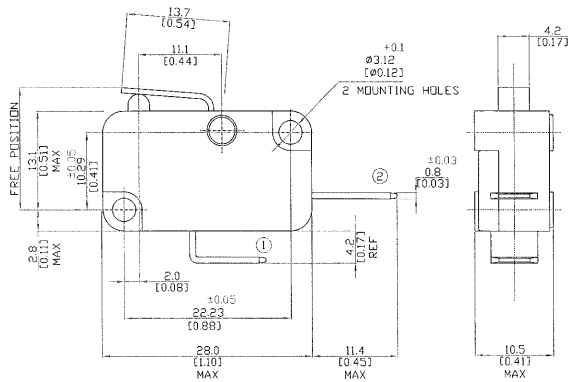
Specifications

Housing	Glass reinforced nylon
Plunger	Nylon
Mechanism	> 3 mm gap, positive-action, single pole
Functions	Normally closed
Contacts	Fixed silver nickel, Moving silver
Terminals	6.3 mm (0.25 in) faston NC (2) - brass, Common (1) - brass, Ag-plated
Temperature range °C	-40°C to +85°C
Mechanical life	10 ⁶ cycles minimum, impact-free actuation
Protection	IP40 (enclosure)
Mounting	Side mounting
Actuators	Plain lever - stainless steel, roller lever - stainless steel, nylon roller
Lid	Polycarbonate

Circuit diagram



Dimensions

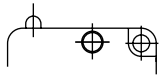
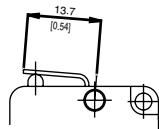
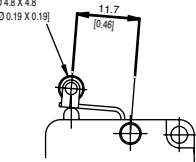


Recommended maximum electrical ratings

Voltage (max)	Load (A)	Horsepower	Approval
250 VAC	10 (0.75 pf)	-	ULS 1054/CSA 22.2 No. 55 - 100,000 operations
250 VAC	-	½ HP	ULS 1054 - Horsepower - 6,000 operations
250 VAC	10 (3)	-	EN 61058-I T85 50,000 operations
125 VAC	-	½ HP	ULS 1054 - Horsepower - 6,000 operations
0 - 15 VDC	10	-	General rating - 50,000 operations
15 - 30 VDC	7	-	General rating - 50,000 operations

BVM3

Operating Characteristics

Actuator	Reference	Actuating Force at contact break Maximum		Release Force at total travel Minimum		Free Position		Contact gap at total travel	
		(N)	(ozf)	(N)	(ozf)	Maximum (mm)	(in)	Minimum (mm)	(in)
Plunger 	BVM3FULS	4.5	16.2	4.8	17.3	15.8	0.62	3.0	0.12
Y Lever 	BVM3FYULS	4.5	16.2	4.8	17.3	16.8	0.66	3.0	0.12
YR Lever 	BVM3FYRULS	5.0	18.0	5.5	19.8	22.35	0.88	3.0	0.12

Operating characteristics are specified from the mounting holes.

Total travel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic type	BVM3	Example: BVM3	F	Y	ULS
Terminals	F	Faston 6.3 × 0.8 mm			
Actuators	Y	No symbol, without lever			
	Y	Straight lever 13.7 mm			
	YR	Roller lever 11.7 mm			
Approvals	ULS	UL 100 k operations and CSA approval			
Special Features	/□□□□	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.			

KB5

Positive-action

Standard

KB5

- Characteristics
- positive-action forced double break switching
 - > 3 mm contact gap at full travel
 - high electrical rating
 - faston terminals

Rating Up to 250 VAC, 20 A

Dimensions (mm) 41 × 19,5 × 15,5

- Actuator
- plunger
 - plain lever
 - roller levers

Approvals UL, CSA



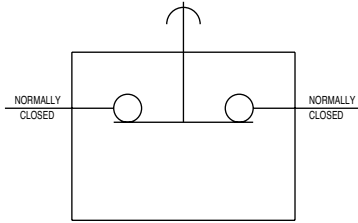
Preferred Range

Ordering Reference	Actuating Force (N) (ozf)		Sealing	Operating pos (mm) (in)		Terminal	Circuit	Actuator	Contacts	Electrical rating
KB5FULS	3.00	10.0	IP40	16.8	0.66	Faston	NC	Plunger	Ag	Up to 250 VAC, 20 A
KB5FKULS	2.25	8.0	IP40	19.2	0.76	Faston	NC	Plain lever	Ag	Up to 250 VAC, 20 A
KB5FKRULS	2.25	8.0	IP40	31.0	1.22	Faston	NC	Roller lever	Ag	Up to 250 VAC, 20 A

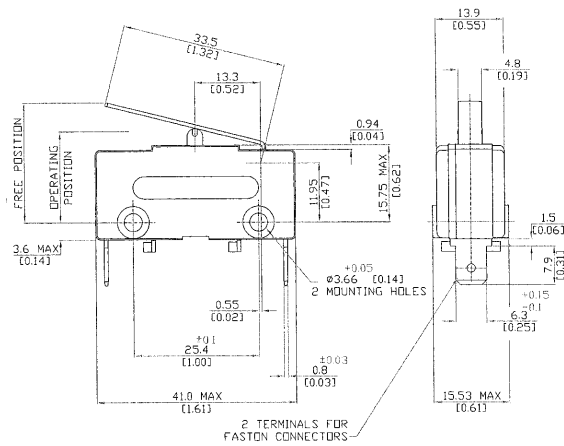
Specifications

Housing	Polycarbonate
Plunger	Nylon
Mechanism	Single pole, double break, positive action
Functions	Normally closed
Contacts	Fixed – silver, Moving – silver cadmium oxide
Terminals	6.3 mm (0.25 in) faston, brass
Temperature range	-40°C to +85°C
Mechanical life	10 ⁷ cycles minimum, impact-free actuation
Protection	IP40 (enclosure)
Mounting	Side mounting
Actuators	Plain lever - stainless steel, roller lever - stainless steel, nylon roller
Approvals	UL and CSA

Circuit diagram



Dimensions

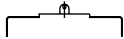


Recommended maximum electrical ratings

Voltage (max)	Resistive load (A)	Inductive load	Horsepower	Approval
250 VAC	20 (0.75 pf)	-	-	ULS 1054/CSA 22.2 No. 55 - 100,000 operations
250 VAC	-	-	2 HP	ULS 1054 - Horsepower - 6,000 operations
125 VAC	-	-	1 HP	ULS 1054 - Horsepower - 6,000 operations
0 - 15 VDC	15	-	-	General rating - 50,000 operations
15 - 30 VDC	10	-	-	General rating - 50,000 operations

KB5

Operating Characteristics

Actuator	Reference	Actuating Force		Operation Position		Free Position		Contact gap at total travel		
		(N)	(ozf)	(mm)	(in)	Maximum (mm)	(in)	Minimum (mm)	(in)	
Plunger 	KB5FULS	3.00	10.8	16.8	0.66	19.3	0.76	2 × 3.0	2 × 0.12	
¹ At contact separation of 2 × 1.5 mm										
K Lever 	KB5FKULS	2.25	8.0	19.2	0.76	26.0	1.02	2 × 3.0	2 × 0.12	
KR Lever 	KB5FKRULS	2.25	8.0	31.0	1.22	36.5	1.40	2 × 3.0	2 × 0.12	

Recommended minimum contact separation 2 × 1.5 mm (2 × .06) indicated when groove in plunger lines up with case. Operating characteristics are specified from mounting holes.

Total travel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic type	KB5	Example: KB5	F	K	ULS
Terminals	F	Faston 6.3 × 0.8 mm			
Actuators	No symbol, without lever				
	K	Plain lever 33.5 mm			
	KR	Roller lever 30.5 mm			
Approvals	ULS	UL 100 k operations and CSA approval			
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.			

V9B

Positive-action

Metal housed

V9B

- Characteristics
- positive-action (forced break) contacts
 - > 3 mm contact gap at full travel
 - robust metal housing
 - IEC (IP67) sealed mechanism
 - high temperature unwired versions
 - pre-wired options – vertical and horizontal leads

Rating 250 VAC, 10 A max.

Dimensions (mm) 42.3 × 24.5 × 16

- Actuator
- plunger
 - roller levers

Approvals UL, CSA



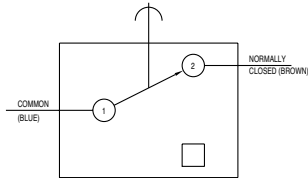
Preferred Range

Ordering Reference	Actuating Force (N) (ozf)		Sealing	Terminal	Circuit	Actuator	Contacts	Electrical rating
V9B	2.5	9.0	IP67	M3 screw	NC	Plunger	Ag	Up to 250 VAC, 10 A
V9BVC2	2.5	9.0	IP67	Pre-wired	NC	Plunger	Ag	Up to 250 VAC, 10 A
V9BLR	2.7	9.7	IP67	M3 screw	NC	Roller lever	Ag	Up to 250 VAC, 10 A
V9BLRVC2	2.7	9.7	IP67	Pre-wired	NC	Roller lever	Ag	Up to 250 VAC, 10 A
V9BLR1	2.0	7.2	IP67	M3 screw	NC	Roller lever	Ag	Up to 250 VAC, 10 A
V9BLR1VC2	2.0	7.2	IP67	Pre-wired	NC	Roller lever	Ag	Up to 250 VAC, 10 A

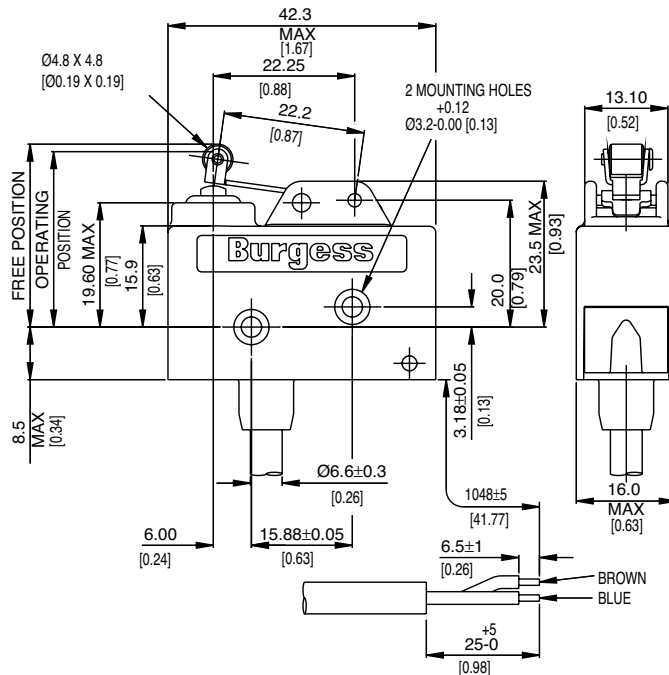
Specifications

Housing	Zinc diecasting
Plunger	Acetal
Mechanism	>3mm gap, positive-action, single pole
Functions	Normally closed
Cowl	Silicon rubber
Contacts	Silver
Terminals °C	M3 screws with captive washers
Temperature range	-40°C to +125°C (switch only) -10°C to +85°C (pre-wired)
Mechanical life	10 ⁶ cycles minimum, impact-free actuation
Protection	IP67 (enclosure)
Mounting	Side mounting
Actuators	Roller levers - stainless steel, nylon roller

Circuit diagram



Dimensions


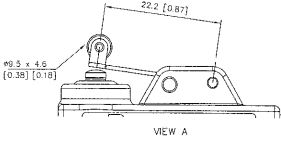
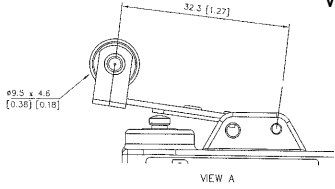


Recommended maximum electrical ratings

Voltage (max)	Load (A)	Approval
250 VAC	10 (0.75 pf)	UL 1054/CSA 22.2 No. 55 - 6,000 operations
0 - 15 VDC	10	General rating - 50,000 operations
15 - 30 VDC	10	General rating - 50,000 operations

V9B

Operating Characteristics

Actuator	Reference	Actuating Force Maximum		Force at total travel		Free Position Maximum		Contact gap at total travel	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)
Plunger 	V9B V9BVC2	2.5	9.0	3.7	13.3	22.6	0.89	3.0	0.118
LR Lever 	V9BLR V9BLRVC2	2.7	9.7	4.2	15.1	31.0	1.22	3.0	0.118
L Lever 	V9BLR1 V9BLR1VC2	2.0	7.2	3.0	10.8	39.0	1.54	3.0	0.118

Operating characteristics are specified from the mounting holes.

Total travel: Plunger can be depressed flush with housing. The housing should not be used as an end stop.

Type coding key for standard products

Basic type	V9B	Example: V9B LR H C2
Actuators	No symbol, plain plunger LR Roller lever 22.2 mm LR1 Roller lever 32.3 mm	
Terminals	No symbol, unwired H C2 Horizontal pre-wired cable V C2 Vertical pre-wired cable	
Pre-wired with	No symbol, 1 m cable	
Special Features	/ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Saia-Burgess specialise in customer specific solutions. Additional product variants are available or can be provided. If your requirements cannot be satisfied from the options listed, please contact www.saia-burgess.com or your local SB outlet.

Terminology: Snap-action switches

ADDITIONAL TECHNICAL INFORMATION

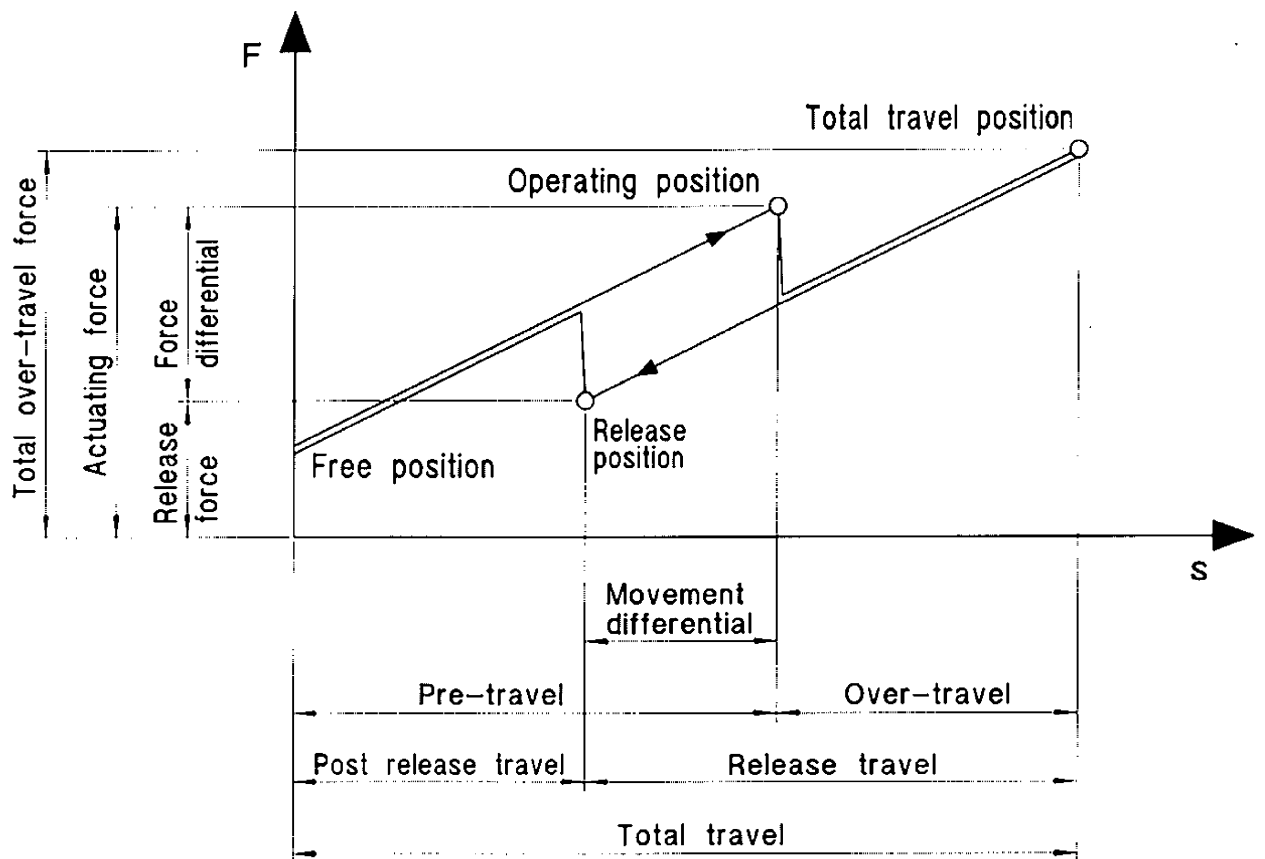
Contact Resistance

The contact resistance is the electrical resistance measured at the terminals of the switch when the contacts are closed. The resistance specifications refer to unwired switches in new condition.

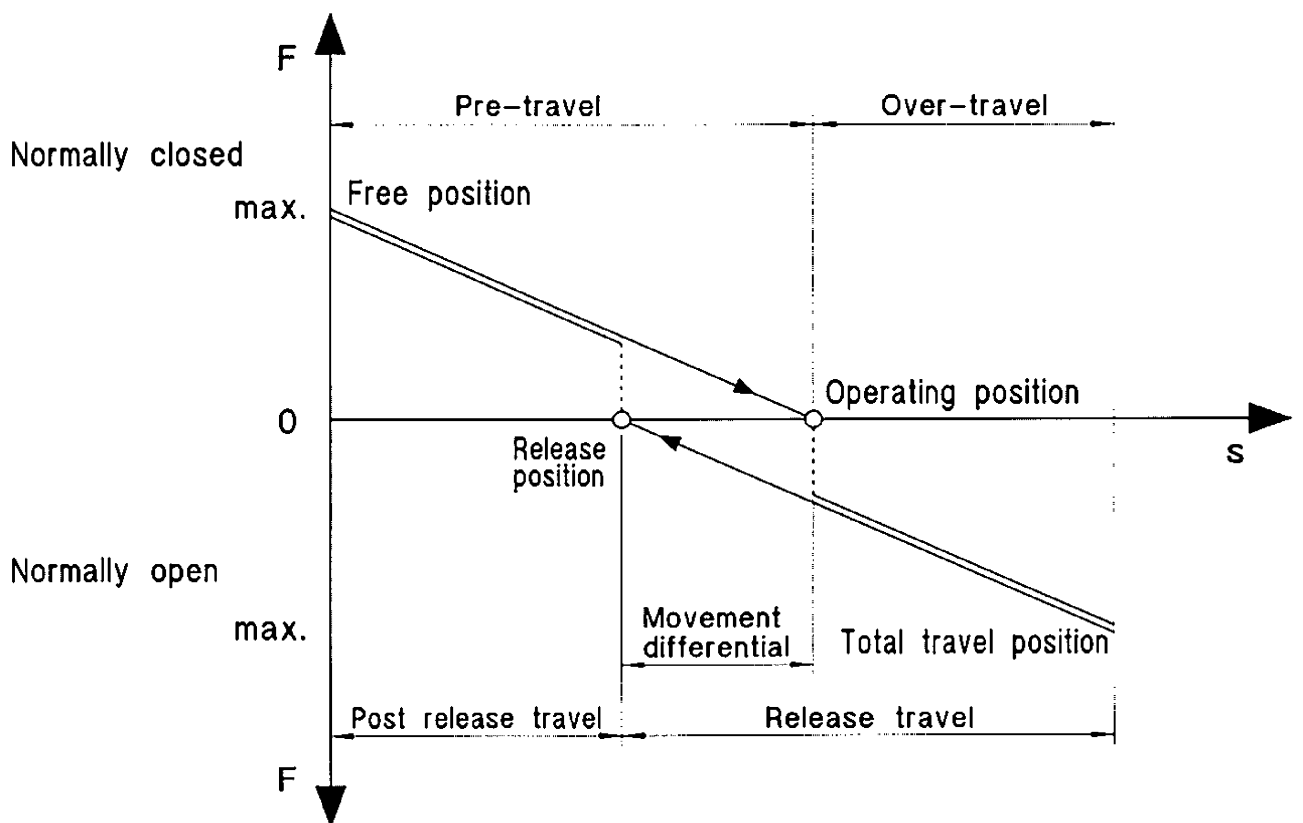
Positions – forces – movements

Free position	Position of the actuator, without any influence from an external force.
Operating position	Position of the actuator when contact changeover takes place.
Total travel position	Position of the actuator at the end of the allowed travel.
Release position	Position of the actuator when the switch mechanism resets.
Actuating force	The force required to move the actuator from the free position to the operating position.
Release force	The value to which the applied force must be reduced to allow the mechanism to reset after operation.
Force differential	Difference between actuating force and release force.
Pre-travel	Movement of the switch actuator between free and operating position.
Over-travel	Movement of the switch actuator beyond the operating position.
Total travel	The sum of pre-travel and over-travel.
Movement differential	Distance between operating position and release position.
Release travel	Movement of the switch actuator between release and total travel position.
Post release travel	Movement of the switch actuator between release and free position.

Actuating force – movement – diagram



Contact force – movement – diagram



Switch Technology

Clearance Distance—the distance in air between current carrying parts of opposite polarity or between any current carrying part and an earthed-(grounded) metal plate to which the switch is attached.

Creepage Distance – the path along the surface of insulating material between current carrying parts of opposite polarity or between any current carrying part and an earthed (grounded) metal plate to which the switch is attached.

Insulation Resistance – resistance as measured between the normally closed terminals, or between all terminals connected together and a metal plate to which the switch is mounted. In dry conditions the value would be expected to be greater than 5M Ω .

Single Throw – a switch which provided an ON-OFF or OFF-ON function but does not change over from one conductor to another. Such switches are usually referred to as being «normally-closed only» or «normally-open only».

Switching Cycle – one complete switching operating from free position into overtravel and back through release position to free position.

Switch Resistance – a total resistance offered by a switch in a circuit, as measured from terminal through mating contacts, to terminal.

Transit Time – the time taken by the moving contact in a snap-action mechanism to move from one stable position to another.

Electrical Ratings

Electrical ratings given in the catalogue are ratings according to UL1054, CSA22.55 or IEC61058-1.

Where these are not available, a general rating is given based upon in-house laboratory testing.

The ratings tables should be considered as safe working maximums for most applications. However, switch performance is influenced by a variety of factors, including:

- Frequency of operation
- Type of load
- Amount of travel used
- Temperature
- Humidity

Please do not hesitate to contact Saia-Burgess about your specific application.

Approvals

CSA mark. Switch meets CSA's safety standards

UL Recognized Component Mark for Canada and the United States

ENEC Mark. Switch fulfills European EN standards. The two digit number indicates which certification body has issued the ENEC Certificate



CQC Approval (China) is available for certain switches

Switch Life

a. **Electrical Life** – the electrical life data contained in this catalogue is based on laboratory controlled tests. In practice, frequency and speed of operation, type of load, suppression, actuator travel used, ambient humidity and temperature and other environmental conditions can have a major effect on switch life.

Individual assessments for specific applications are possible and can be undertaken by Saia-Burgess on request.

Please ask Saia-Burgess if you would like an assessment for your specific application.

b. **Mechanical Life** – the figures quoted relate to the number of switching cycles made without an electrical load.

Switch Drawings

All drawings in this catalogue are third angle projection.

All dimensions in this catalogue are nominal, except where specifically shown.

Application Technology

Shock and Vibration

If switches are likely to be subjected to shock or vibration, select models with the highest available actuating force.

Saia-Burgess switches feature low mass mechanisms which are inherently resistant to shock and vibration.

If possible, the switches should be mounted so that the line of acceleration is at right angles to the travel of the plunger. The maximum available overtravel should be used.

Direct Current

Direct current (DC) ratings where shown should not be exceeded if destructive arcing and contact welding are to be avoided.

Some form of arc suppression is recommended when switches are used in DC circuits containing inductive devices wired in series with the switch and the supply.

Lamp Loads

Because of the very high inrush currents associated with incandescent lamps, applications should be subject to individual assessment.

Capacitive Loads (including fluorescent lamps)

These can generate very high peak currents which can cause contact welding. Applications should be subject to individual assessment.

Inductive Loads

The general ratings tables included in this catalogue provide data for switches used to control inductive circuits at a power factor of 0.5 (EN 0.6; UL 0,7 means HP-Rating 0,5).

Contact Materials

Silver and silver alloys are the primary contact materials used in Saia-Burgess switches.

The ratings tables shown refer to switches with silver/silver alloy contacts.

Gold contacts should be specified when switches are to be used in low voltage control or logic circuits, especially when long periods of inactivity are expected or when atmospheres with a high sulphur content may be encountered.

Gold contacts are generally available in two forms; gold plated silver alloy contacts, which can also be used at higher currents or gold alloy cross-point contacts, which are only suitable for switching low currents.

Please ask Saia-Burgess if you would like an assessment for your specific application.

Switch Actuation

Direct Operation

Actuating plungers should be operated in the direction of their axis. Where this is not possible the use of actuating levers is recommended. For direct actuation the attack angle should not exceed 30°.

Actuating Levers

Various lever types are available for use with Saia-Burgess switches. They are generally stainless steel.

If roller or cam-follower levers are approached in the reverse direction, care must be taken to ensure that the angle of approach is small enough not to jam the lever.

Actuation by Cams

Cam-follower levers are particularly well suited for use with plastic actuating cams.

Abrupt actuation or release of switch actuators shortens the life of the switches.

For this reason cam should preferably provide a continuous movement. Ideally they should be of cycloidal form.

Environmental Protection

Protection Classifications

The protection classes of Saia-Burgess switches are in accordance with IEC 529 and are covered by just four codes.

IP40

Adequate protection against solids such as probing fingers and small wires >1mm. Liquids however can gain access and, unless externally protected, the switches should be mounted in dry or well-sheltered positions.

IP5K4

Good protection against solid foreign bodies, including dust and water splashing against the enclosure from any direction.

Switches may be used out of doors if sheltered from the worst of the elements or on factory machines subjected to normal washing down procedures.

IP65

Complete protection against solids, including dust, and against low pressure jets of water from all directions.

IP6K7

Complete protection against solids including dust and against immersion in water at a specific pressure for a specified time.

We reserve this code for switches which are factory sealed and tested.

Switches should not be immersed in any liquid.

*International IK code indicates protection against mechanical impact regarding to EN 50102.

Working Temperatures

For details of the working temperatures applicable to individual types, refer to the appropriate specification sheet. Special versions suitable for temperatures outside these ranges may be possible. Please contact us for information.

All quoted temperatures assume stable operation. They do not imply an ability to withstand excessive cycling within the range.

Health & Safety

Saia-Burgess has ensured, so far as it is reasonably practicable, that their products are as described in this catalogue or in other current company publications, or as specified on Saia-Burgess installation drawings. They have been so designed and constructed as to be safe and without risk to health when installed by suitably qualified personnel in accordance with relevant legislation, codes of practice, regulations (including IEE Wiring Regulations), the installation recommendations offered by the company and the accepted rules of the art. Their usage should be confined within the ratings limitations and parameters of-application indicated in this catalogue and elsewhere.

Please contact us should you need additional information or guidance.

Service Recommendations

Maintenance

Saia-Burgess switches are not user-maintainable but they should be kept in a reasonably clean, paint-free condition, especially in the actuator area. Regular checks should be made on mounting security and on the actuating medium to switch actuator relationship.

Lubrication or the use of aqueous or chemical cleaning fluids is not recommended.

Installation Recommendations

The following notes are intended merely to stress the most important and general aspects of good switch installation procedure and to provide some helpful additional information.

Safety Consideration

Installation should only be carried out by competent personnel.

Switch Positioning and Operation

Pre-loading of the switch actuator must be avoided. The actuating medium must be able to operate the switch through the operating position into overtravel and then to retract far enough to allow the switch to regain its free position.

Saia-Burgess recommends that the actuating medium should drive the switch into at least 50% of the available overtravel.

All ratings tables shown in this catalogue are based on the use of all the available overtravel.

Mounting

Side mounting switches should be mounted on smooth, firm, flat surfaces using the recommended screw size. Avoid over tightening the screws. For added security, they should be locked using epoxy resin. Do not attempt to enlarge switch mounting holes and avoid over stressing the switch. Use insulating material between the switch and metallic plates to increase clearance on switches with open terminals.

Connections

When soldering, overheating of the switch insulation must be avoided. In certain circumstances, it may be advisable to use a heat shunt. For optimum mechanical strength, the conductor should be wrapped round the tip of the terminal taking care to avoid loose strands of wire.

The soldering iron tip should be applied to the end of the terminal while simultaneously applying solder. Remove the iron as soon as the solder has wetted the conductor and terminal end. A-soldering iron tip temperature of 350°C (260°C/5 seconds for PCB Terminals) applied for a maximum of 2-3 seconds should be adequate.

For lead-free solder, is usually needed an iron tip temperature 15% higher.

Installation Recommendations (EN 61058-1)

Mounting Holes and Screw sizes				Mounting Screw Torque
Normal hole Diameter (mm)	Diameter (in)	Metric Screw	Unified Thread Screw	For guidance when using mild steel screws:
2.2/2.3	0.067/0.091	M2	#2	M2 or #2 screws 0.3Nm
3.1/3.2	0.122/0.126	M3	#4	M3 or #4 screws 0.5Nm
5.6/5.7	0.142/0.146	M5.5	#6	M5.5 or #6 screws 0.8Nm
5.1/5.2	0.201/0.205	M5	#10	M5 or #10 screws 3.0Nm



Switches

Momentary	Type	Preferred Products	Page
	1427	1427-839.02 1551	168
	1430	1430-045.01 1551	171
Snap-action	1429	1429-001.03 4451	174
	XKA	XKA304W1AAJ11 XKA304W1AAJ21 XKA304W1AAL11	177



1427

Switches

Momentary

1427

Characteristics ■ single pole
■ faston
■ snap-in mounting or centre-fixing

Rating 250 VAC, 0.2 [0.2] A
1E5
250 VAC, 0.25 A

Dimensions (mm) various

Actuator ■ plunger

Approvals ENEC, cUL



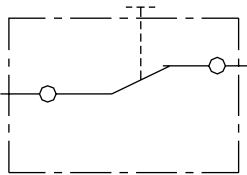
Preferred range switches

Ordering Reference	Illumination	Terminals	Mounting	Function	Actuator colour	Length of plunger
1427-839.02 1551	without	Faston	Snap-in	NC	White	18,0 mm

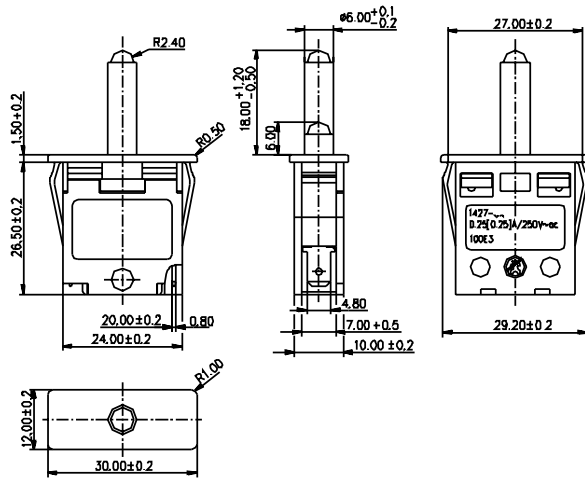
Specifications

Base / cover	PA
Plunger	PBPT
Mechanism	Single pole
Functions	Momentary normally closed
Contacts	Ag
Protection	IP 00
Mounting	Customised mounting
Tracking Resistance	PTI 250
Glow-wire	850°C

Circuit diagram circuit diagram

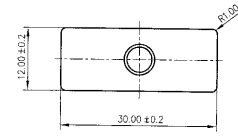
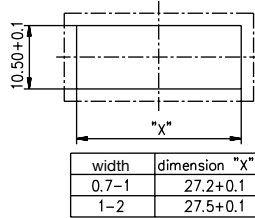


Dimensions



Operating Characteristics

1427 250 VAC, 0,2 [0,2] A
100.000 cycles T55



Standard Range

Ordering Reference	Illumination	Terminals	Mounting	Function	Actuator colour	Length of plunger
1427-022.02 1511	Without	Faston	Centre-fixing	NC	White	17,0 mm
1427-132.02 1551	Without	Faston	Snap-in	NC	Black	12,2 mm



1430

Switches

Momentary

1430

Characteristics	■ single pole ■ faston ■ snap-in mounting
Rating	250 VAC, 0.2 [0.2] A 5E4
Dimensions (mm)	various
Actuator	■ lever
Approvals	ENEC



Preferred range switches

Preferred	Illumination	Terminals	Mounting	Function	Lever colour
1430-045.01 1551	None	Faston 4.8 mm	Snap-in	NC	White

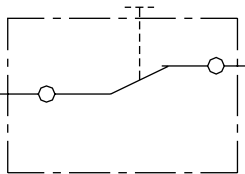


Specifications

Base / cover	PA
Plunger	PBPT
Mechanism	Single pole
Functions	Momentary normally closed
Contacts	Ag
Protection	IP 00
Mounting	Customised mounting
Tracking Resistance	PTI 250
Glow-wire	850°C

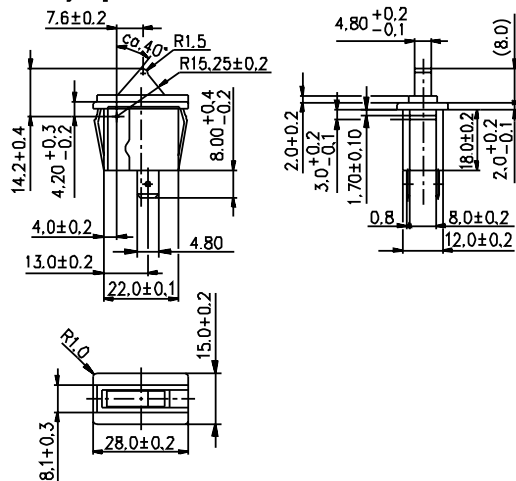
Circuit diagram

circuit diagram



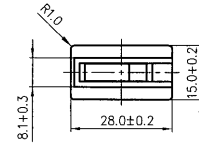
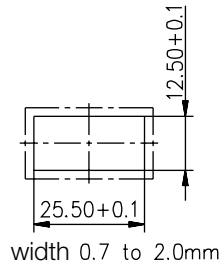
Dimensions

switching angle 30°



Operating Characteristics

1430 250 VAC, 0,2 (0,2) [0,2] A
50.000 cycles T55



Standard Range

Ordering Reference	Illumination	Terminals	Mounting	Function	Lever colour
1430-042.01 1651	None	Faston 6.3 mm	Snap-in	NC	White

1429

Switches

Snap-action

1429

Characteristics ■ single pole
■ snap-action function
■ faston
■ snap-in mounting

Rating 250 VAC, 0.2 [0.2] A
2E5

Dimensions (mm) various

Actuator ■ plunger

Approvals ENEC



Preferred range switches

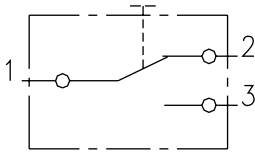
Ordering Reference	Illumination	Terminals	Mounting	Function	Plunger colour	Length of plunger
1429-001.03 4451	None	Faston 2.8 mm	Snap-in	C0	White	23,3 mm

Specifications

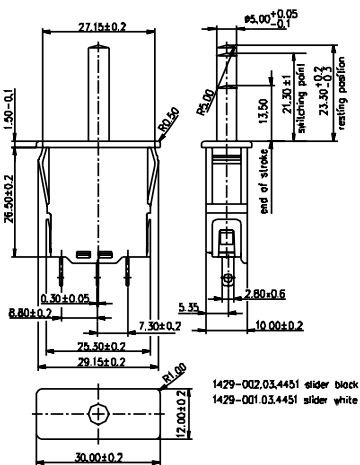
Base / cover	PA
Plunger	PBPT
Mechanism	Single pole
Functions	Momentary normally closed, change-over
Contacts	Ag
Protection	IP 00
Mounting	Customised mounting
Tracking Resistance	PTI 250
Glow-wire	850°C

Circuit diagram

circuit diagram

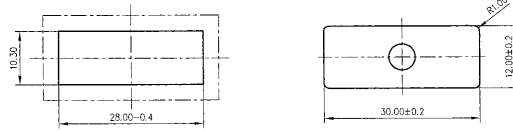


Dimensions



Operating Characteristics

1429 250 VAC, 0,2 (0,2) [0,2] A
 200.000 cycles T85
 Type of protection "n" according to IEC 60079-15 : 1987



Standard Range

Ordering Reference	Illumination	Terminals	Mounting	Function	Plunger colour	Length of plunger
1429-002.03 4451	None	Faston 2.8 mm	Snap-in	CO	Black	23.3 mm
1429-300.01 4451	None	Faston 2.8 mm	Snap-in	CO	White	20.5 mm

XKA

Switches

Snap-action

XKA

Characteristics	<ul style="list-style-type: none">■ long overtravel■ snap-action CO■ snap-in mounting■ type of protection according to IEC 60079-15.1 : 1987
Rating	250 VAC, 1 (1) A 5E4, T85
Dimensions (mm)	28 × 20 × 15
Actuator	<ul style="list-style-type: none">■ plain lever■ round levers
Approvals	UL, CSA, ENEC



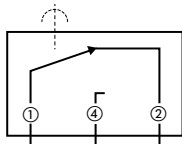
Preferred Range

Ordering Reference	Actuating Force (N)	Sealing	Operating pos. (mm)	Terminal	Circuit	Actuator	Contacts	Electrical rating
XKA304W1AAJ11	0.65	IP40	15,1 ± 1.6	Faston	CO	Straight lever	Ag/AgNi	250 VAC, 1 A
XKA304W1AAJ21	0.62	IP40	14,9 ± 1.6	Faston	CO	Straight lever	Ag/AgNi	250 VAC, 1 A

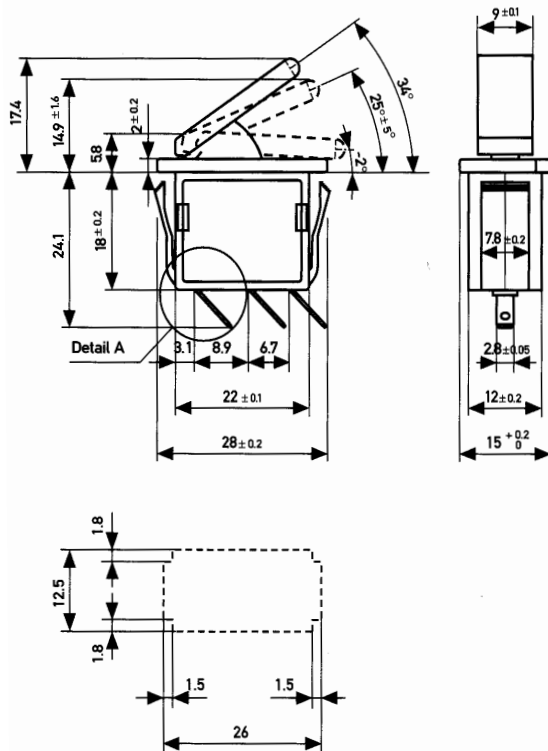
Specifications

Housing	Crastin PBT
Plunger	Crastin PBT
Mechanism	Snap-action system with stainless steel tension spring
Functions	Change-over
Contacts	Ag
Terminals	Faston
Temperature range °C	85°C
Mechanical life	3 · 10 ⁵ cycles minimum
Protection	Enclosure IP 40
Mounting	Snap-on fixing
Contact carrier	Brass
Tracking resistance	PTI 175
Glow-wire	850 °C

Circuit diagram



Dimensions



Recommended maximum electrical ratings

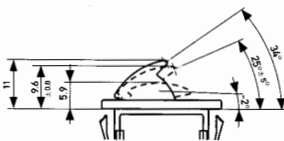
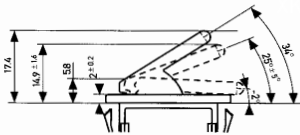
Voltage VAC	Resistive load (A)	Motor load (A)
250	1	1

The breaking capacities in the tables refer to silver contacts. Gold-plated contacts are intended for use in signal circuits where the energy being switched is at the milliwatt level. Power being switched must be limited in order to avoid overheating and possible dispersal of the gold from the contact area.

XKA

Operating Characteristics

Actuator	Reference	Actuating Force		Release Force		Free Position Maximum		Operating Position		Full overtravel Position	
		(N)	(ozf)	(N)	(ozf)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Straight Lever	XKA3...J21	0,65 ± 0,25	2,29 ± 0,90	0,25 ± 0,15	0,88 ± 0,54	17,4	0,685	14,9 ± 1,6	0,59 ± 0,06	5,8	0,23
	J11	0,62 ± 0,25	2,23 ± 0,90	0,24 ± 0,15	0,86 ± 0,54	17,9	0,705	15,1 ± 1,6	0,59 ± 0,06	5,8	0,23
Round Lever	XKA3...L11	1,30 ± 0,50	4,68 ± 1,80	0,50 ± 0,30	1,80 ± 1,08	11	0,433	9,6 ± 0,8	0,38 ± 0,031	5,9	0,24



Type coding key for standard products

Basic type	XKA	Refrigerator switch	Example: XKA	3	03	W	1	A	A	J0	1	AA
Circuit diagram	3	Change-over										
Terminal	03	Solder terminal										
	04	Faston 2.8 × 5.0 mm DIN, 45° formed										
Body	W	PBT white										
	S	PBT black										
Contacts material	1	Silver (Ag)/silver (Ag)										
	8	Gold microprofile (crossbar contact)										
UL	A	1 A, 250 VAC										
	N	without approval										
EN/IEC rating classes in	A	1 (1) A, 250 V~ 5E4, T85 μ approved										
	M	0.3 A, 30 V~ 1E4 not approved										
Type of actuator	J0 to J9	Lever straight										
	L0 to L9	Lever round										
Actuator position	1	Standard										
Customer version	No Symbol	standard type										
	AA to YY	Specials for customer (not necessary to approve)										



Switches

Push Button Switches	Type	Preferred Products	Page
Push Button	3290	3290-002.01 1549 3290-033.01 1849 3290-005.01 1549 3290-500.01 1559	182
	3292	3292-411.01 1541 3292-410.01 1541 3292-401.01 2541 3292-400.01 2541	185
	3293	3293-410.01 1541 3293-400.01 2541	188
	3200	3200-001.09 4859 3200-102.04 4859	191
Rotary Switches	4022	4022-823.01 2849 4022-001.01 9349	193
Slide Switches	3585	3585-808.01 9849	195



3290

Switches

Push Button

3290

- Characteristics
- single pole
 - on/off
 - faston
 - PCB terminals
 - customised mounting
 - momentary or latching
 - high temp. 125°

Rating 250 VAC, 8 (8) A
5E4
125 VAC, 12 A

Dimensions (mm) 13.5 × 19

- Actuator
- plunger
 - square 6 mm

Approvals ENEC, UL, CSA



Preferred Range

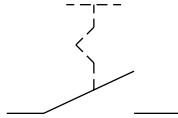
Ordering Reference	Terminals	Mounting	Button length	Function	Approvals	
					ENEC	UL
3290-002.01 1549	Faston 4,8 mm, bottom side	Frameless	8 mm	On-off	8 (8) A	12 A
3290-033.01 1849	PCB, button side	Frameless	5.5 mm	On-off	8 (8) A	12 A
3290-005.01 1549	Faston 4,8 mm, front side	Frameless	8 mm	On-off	8 (8) A	12 A
3290-500.01 1559	Faston 4,8 mm, bottom side	Snap-in		On-off	8 (8) A	12 A

Specifications

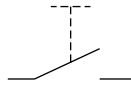
Base	PA
Button	PA
Mechanism	Single pole
Functions	ON/OFF Momentary NO
Contacts	Ag/Ni
Protection	IP 00
Mounting	Snap-in mounting or customised
Tracking Resistance	PTI 250
Glow-wire	850°C
Contact	gap 3 mm
Operating travel	4.5 mm ± 0.2

Circuit diagram

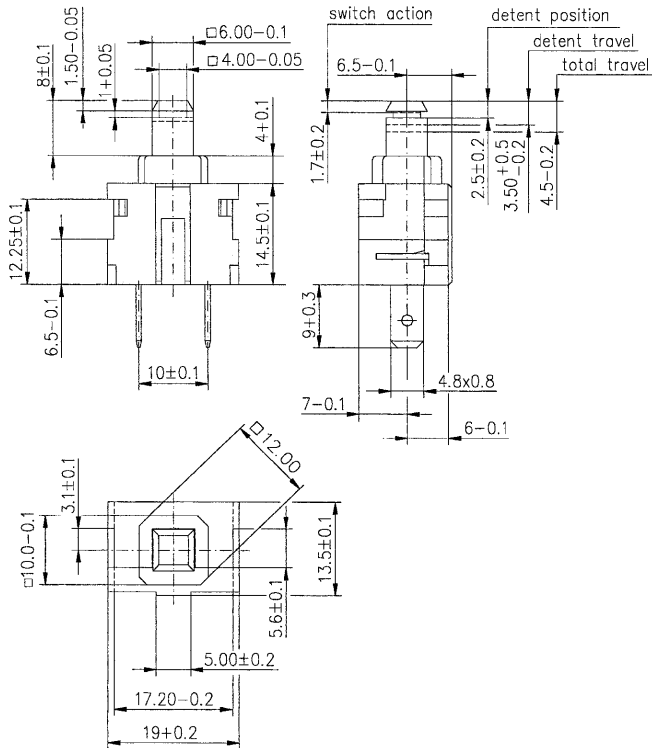
circuit diagram

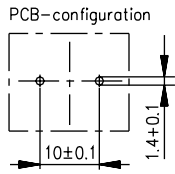


circuit diagram
(momentary switch)



Dimensions





Standard range switches

Ordering Reference	Terminals	Mounting	Button length	Function
3290-037.01 1549	Faston 4,8 mm, narrow side	Frameless	5,5 mm	On-off
3290-812.01 1849	PCB, front side	Frameless	5,5 mm	On-off
3290-808.01 1549	Faston 4,8 mm, front side	Frameless	8,0 mm	Momentary
3290-813.01 1849	PCB, bottom side	Frameless	8,0 mm	Momentary
3290-503.01 1559	Faston 4,8 mm, front side	Snap-in	Customised button	On-off

3292

Switches

Push Button

3292

Characteristics	<ul style="list-style-type: none">■ single/double pole■ on/off■ faston■ PCB terminals■ extended life (5E4)■ customised mounting■ momentary or latching
Rating	250 VAC, 16 (4) A, 1E4, T100 250 VAC, 10 (10) A, 1E4, T100 250 VAC, 8 (8) A, 5E4, T125 125 VAC, 16 A, ¾ hp, T85
Dimensions (mm)	13.5 × 19
Actuator	<ul style="list-style-type: none">■ plunger■ square 6 mm
Approvals	ENEC, cUL, US



Preferred Range

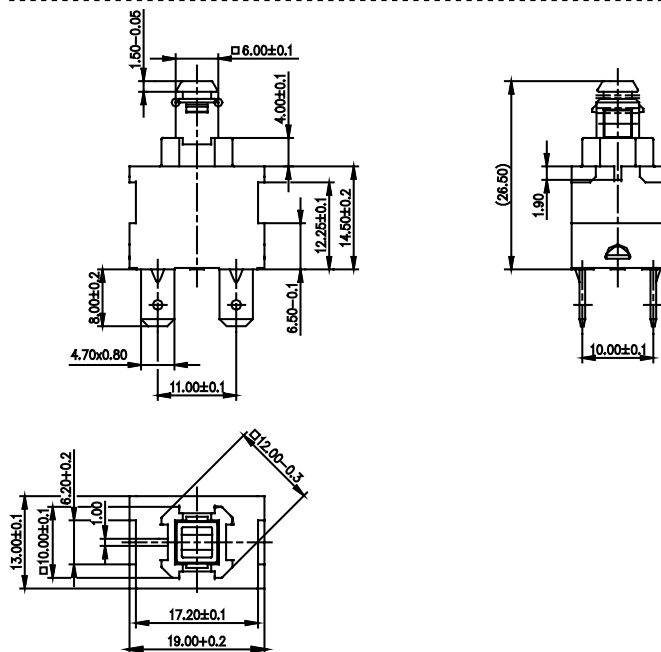
Ordering Reference	Terminals	Mounting	Button length	Function	Pole
3292-411.01 1541	Faston 4.8 mm, bottom side	Frameless	5.5 mm	On-off	Single
3292-410.01 1541	Faston 4.8 mm, bottom side	Frameless	8 mm	On-off	Single
3292-401.01 2541	Faston 4.8 mm, bottom side	Frameless	5.5 mm	On-off	Double
3292-400.01 2541	Faston 4.8 mm, bottom side	Frameless	8 mm	On-off	Double

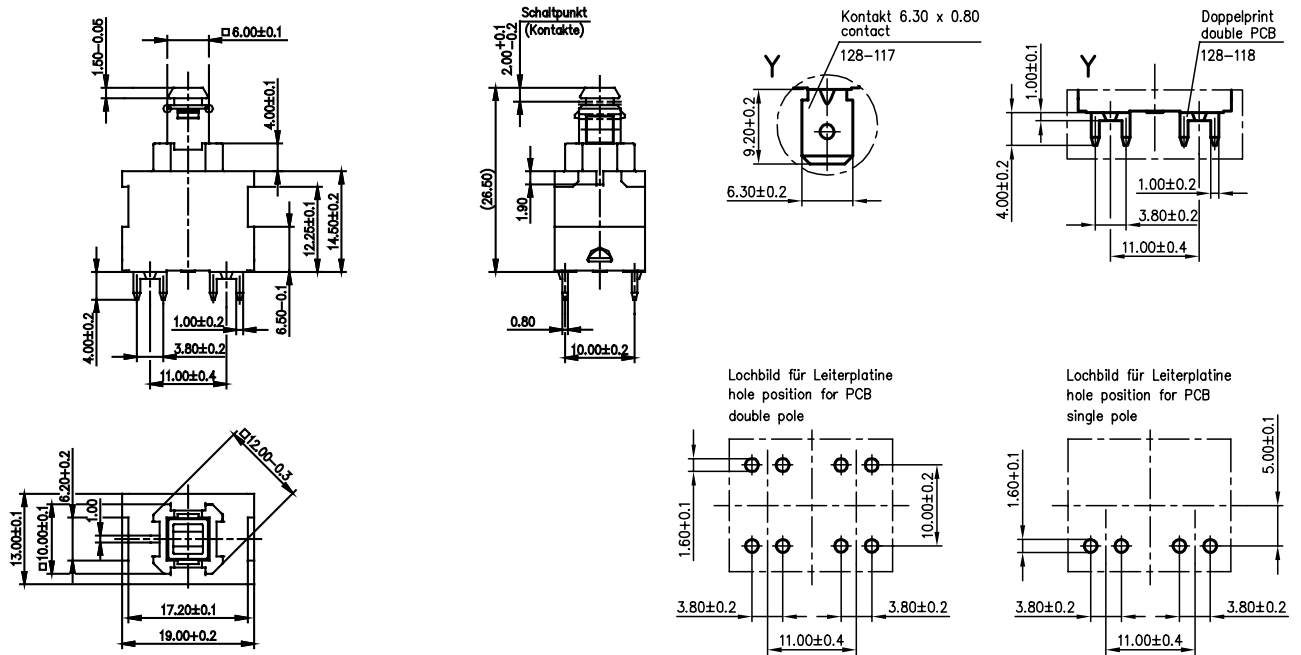
Specifications

Base	PA
Button	PA
Mechanism	Single / double pole
Functions	ON/OFF Momentary NO
Contacts	Ag/Ni
Protection	IP 00
Mounting	Customised
Tracking Resistance	PTI 250
Glow-wire	850°C and IEC 60335-1 Ed. 4
Contact	gap 3 mm
Operating travel	4.5 mm ± 0.2



Dimensions





Standard range switches

Ordering Reference	Terminals	Mounting	Button length	Function	Pole
3292-412.01 1641	6.3. bottom side	Frameless	8 mm	On-off	Single
3292-413.01 1641	6.3. bottom side	Frameless	5.5 mm	On-off	Single
3292-414.01 1841	PCB. bottom side	Frameless	8.0 mm	On-off	Single
3292-415.01 1841	PCB. bottom side	Frameless	5.5 mm	On-off	Single
3292-402.01 2641	6.3. bottom side	Frameless	8.0 mm	On-off	Double
3292-403.01 2641	6.3. bottom side	Frameless	5.5 mm	On-off	Double
3292-404.01 2841	PCB. bottom side	Frameless	8.0 mm	On-poff	Double
3292-405.01 2841	PCB. bottom side	Frameless	5.5 mm	On-off	Double

3293

Switches

Push Button

3293

Characteristics	<ul style="list-style-type: none">■ single / double pole■ on/off■ faston■ PCB terminals■ customised mounting■ momentary or latching
Rating	250 VAC, 8 (8) A, 1E4, T100 250 VAC, 10 (4) A, 1E4, T100
Dimensions (mm)	13.5 × 19
Actuator	<ul style="list-style-type: none">■ plunger■ square 6 mm
Approvals	ENEC



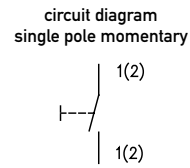
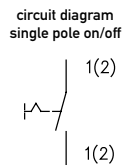
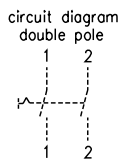
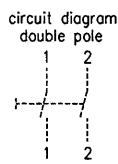
Preferred Range

Ordering Reference	Terminals	Mounting	Button length	Function	Pole
3293-410.01 1541	Faston 4,8 mm, bottom side	Frameless	8 mm	On-off	Single
3293-400.01 2541	Faston 4,8 mm, bottom side	Frameless	8 mm	On-off	Double

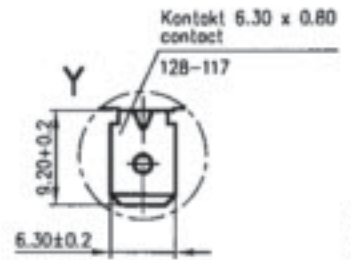
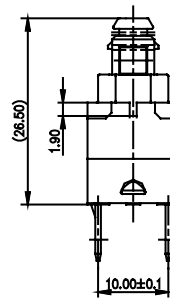
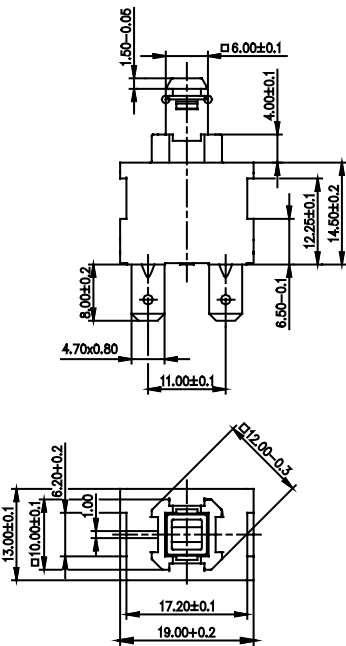
Specifications

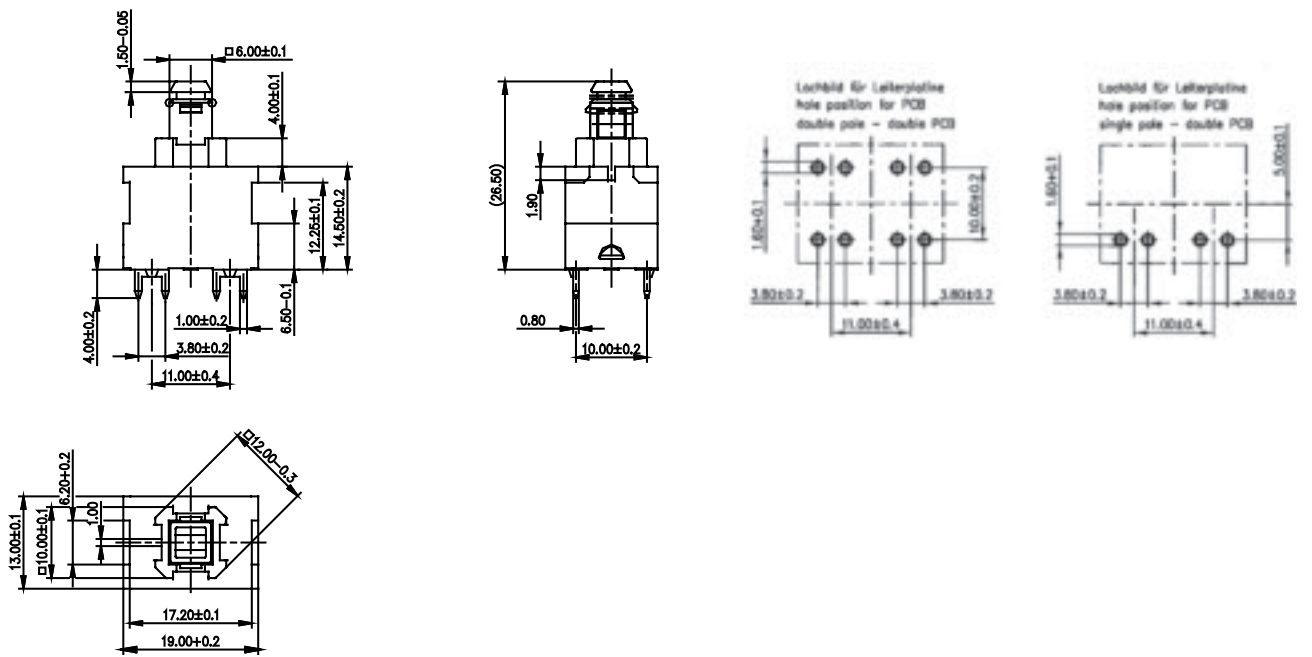
Base	PA
Button	PA
Mechanism	Single / double pole
Functions	ON/OFF Momentary NO
Contacts	Ag/Ni
Protection	IP 00
Mounting	Customised
Tracking Resistance	PTI 250
Glow-wire	850°C
Contact	gap < 3 mm

Circuit diagram



Dimensions





Standard range switches

Ordering Reference	Terminals	Mounting	Button length	Function	Pole
3293-412.01 1641	Faston 6.3, bottom side	Frameless	8 mm	On-off	Single
3293-414.01 1841	PCB, bottom side	Frameless	8 mm	On-off	Single
3293-402.01 2641	Faston 6.3, bottom side	Frameless	8 mm	On-off	Double
3293-404.01 2841	PCB, bottom side	Frameless	8 mm	On-off	Double

3200

Switches

Push Button

3200

- Characteristics
- illumination optional
 - single pole
 - change-over
 - customised mounting
 - momentary or latching
 - PCB terminals

Rating 12 VDC, 2 A

Dimensions (mm) 12,5 × 12,5 × 19,5

Actuator ■ square 10,4 mm

Approvals none



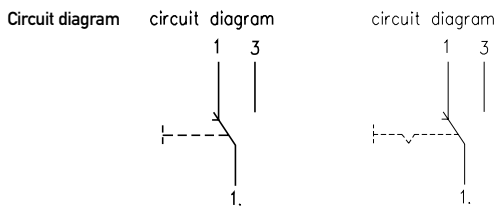
Preferred Range

Ordering Reference	Terminals	Mounting	Actuator	Function
3200-001.09 4859	PCB	Customised	Button	CO
3200-102.04 4859	PCB	Customised	Button	CO, momentary

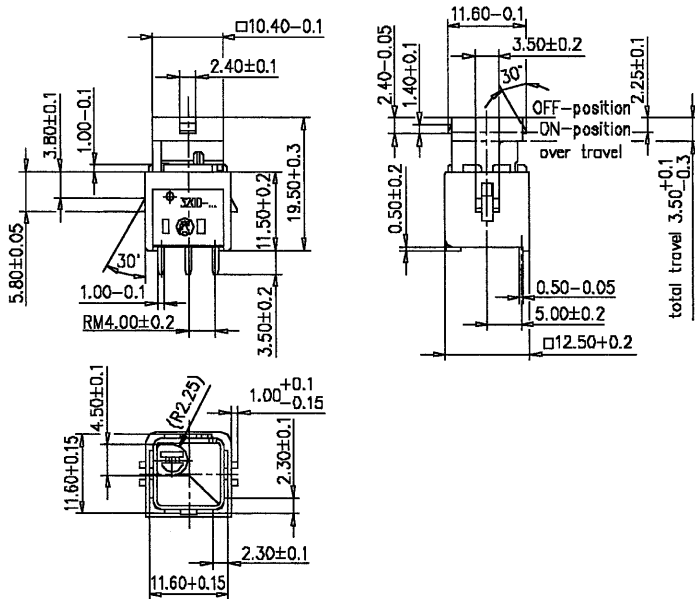


Specifications

Base	PC
Cover	PBPT
Button	POM
Mechanism	Single pole
Functions	Change-over
Contacts	Ag
Protection	IP 00
Mounting	Customised
Contact	Gap <3 mm
Operating travel	3.5 mm +0.1/-0.3



Dimensions



4022

Switches

Rotary switches

4022

Characteristics

- single pole with on/off or step function
- double pole with on/off-function
- solder, PCB, Faston terminals
- high temp. 100°

Rating

250 VAC, 12 (2) A
125 VAC, 10 A

Dimensions (mm) 30 × 14 × 15.3

Actuator

- cam
- square access hole 3.25 mm²

Approvals ENEC, UL, CSA



Preferred Range

Ordering Reference	Terminals	Mounting	Switching	Actuator	Operation angle
4022-823.01 2849	PCB	Customised	On-off	Hole	60°
4022-001.01 9349	Solder	Customised	0-I-II	Shaft	30°

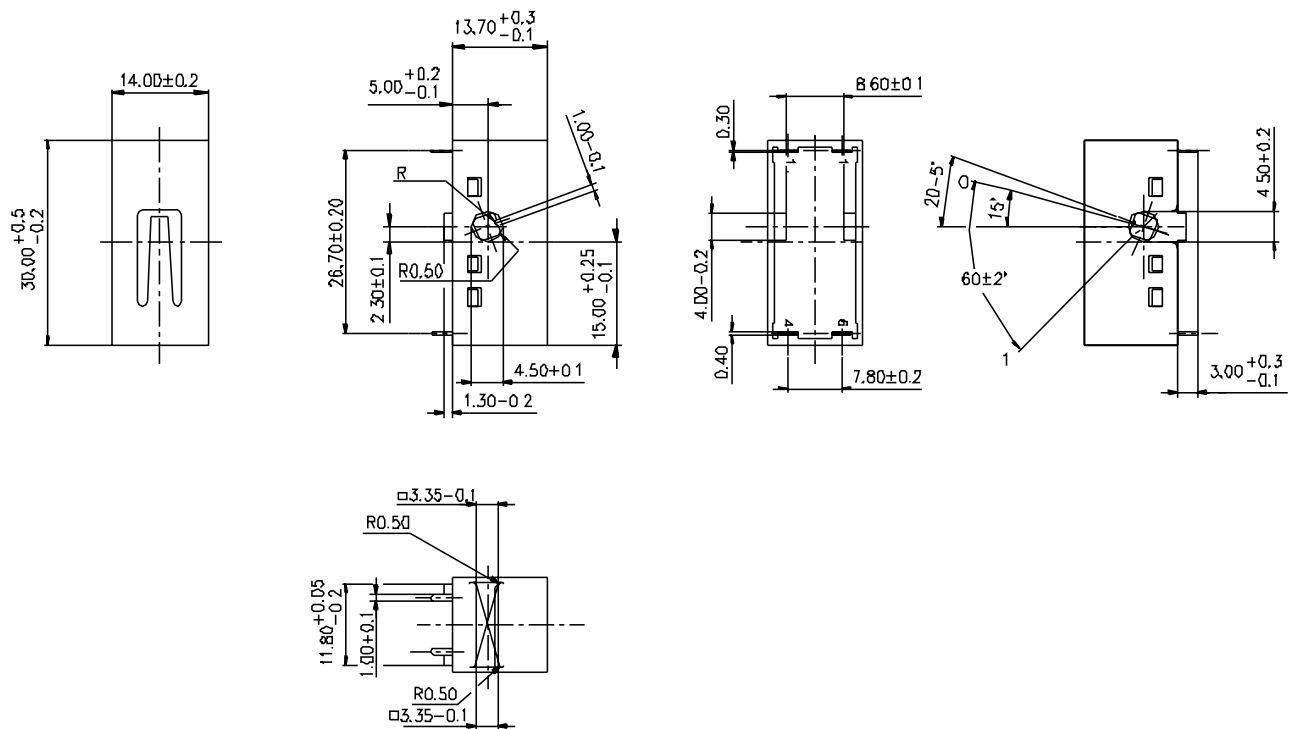
Specifications

Base and cover	PA
Cam	PBT
Mechanism	Single pole with ON/OFF or step function Double pole with ON/OFF function
Functions	ON/OFF
Contacts	Ag/Ni
Protection	IP 00
Mounting	Customised mounting
Tracking Resistance	PTI 250
Glow-wire	850°C
Contact	Gap >3 mm
Switch angle	30° / 45° / 60°

Circuit diagram

Contacts		Switch position
1-4	1-6	_____
○	○	0
●	○	1
●	●	2

Dimensions



Standard range switches

Ordering Reference	Terminals	Switching	Actuator	Operation angle
4022-042.01 1349	Solder	On-off	Hole	30°
4022-501.01 9549	Faston 4,8 mm	I-II	Hole	60°
4022-032.01 2849	PCB	On-off	Hole	30°
4022-827.01 9849	PCB	M-0-I-II	Shaft	30°

4022

Switches

Slide Switches

3585

- Characteristics
- single pole
 - step function
 - PCB-terminals
 - customised mounting
 - high temp. 85°
-

Rating 250 VAC, 10 (2) A

Dimensions (mm) 39 × 20 × 15 mm

Actuator ■ slider

Approvals ENEC



Preferred Range

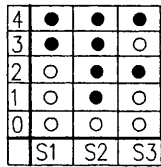
Ordering Reference	Terminals	Mounting
3585-808.01 9849	PCB	Customised



Specifications

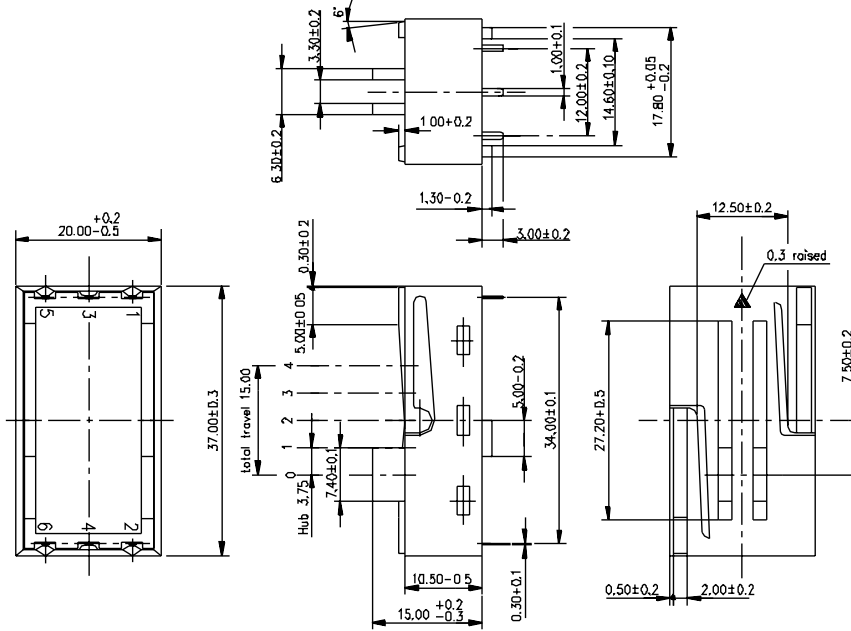
Base and cover	PA
Slider	PA
Mechanism	Single pole with step function
Functions	Step switch
Contacts	Ag/Ni
Protection	IP 00
Mounting	Customised mounting
Tracking Resistance	PTI 250
Glow-wire	850°C
Contact	Gap >3 mm
Operating travel	4 × 3.75 mm

Circuit diagram



S 1	Kontakt	1+2
S 2	Kontakt	3+4
S 3	Kontakt	5+6

Dimensions



Switches

Manually operated Switches	Type	Preferred Products	Page
Rocker	3670	3670-201.01 1542 3670-202.01 1542 3670-001.01 1555 3670-017.01 1551 3670-010.01 1551 3670-004.01 1552 3670-013.01 1552 136-305.0000 136-304.0000 136-301.0000 136-332.0000 136-326.0000 136-342.0000 136-320.0000	198
	3672	3672-722.01 1541 3672-727.01 1341 3672-311.01 1541 3672-515.01 1542 111-342.0000 111-337.0000 111-355.0000 111-327.0000 111-439.0000 111-024.0167 111-026.0167	202
	3673	3673-600.02 4550 136-305.0000 136-301.0000 136-332.0000	206
	3680	3680-012.01 1651 3680-561.01 1552 3680-805.01 1552 3680-031.01 1541 3680-401.01 1542 3680-402.01 1642 3680-408.01 1642 131-350.0000 131-321.0000 131-455.0000 131-465.0000	209
Auto-Shut-Off Rocker	Tippmatic®	3600-411.27 1552 3600-414.27 1552 3600-412.27 1552 100-012.0152 100-012.0167 100-071.0150 100-071.0167	212
Terminology			215

3670

Switches

Rocker

3670

- Characteristics
- single pole
 - on/off
 - illuminated/non-illum.
 - snap-in mounting
 - faston
 - optional with momentary function
 - temp. 100/55°

Rating 250 VAC, 6 (2) A
250 VAC, 12 (2) A
125 VAC, 12 A

Dimensions (mm) various

Actuator ■ rockers in different shapes/colours

Approvals ENEC, cUL



Preferred Range Switch

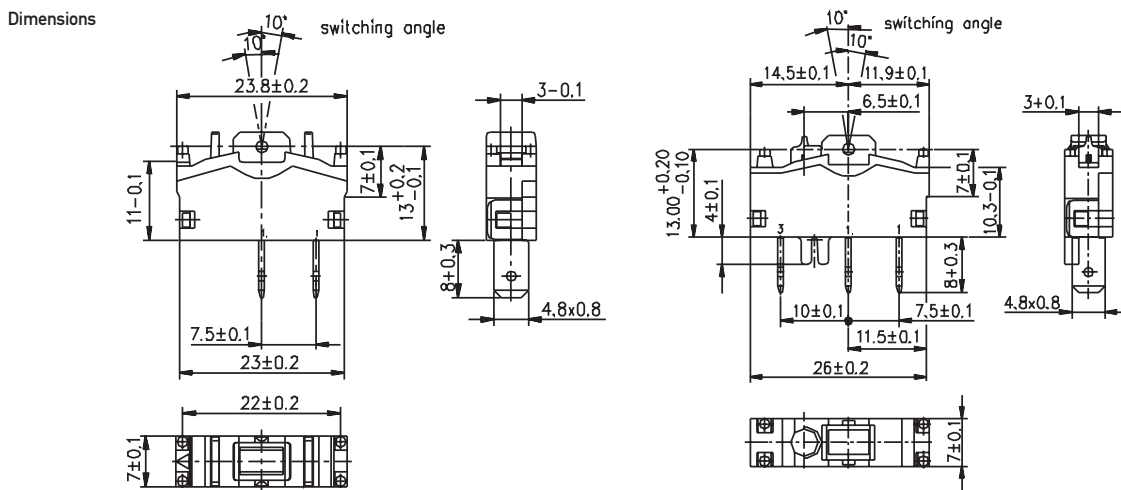
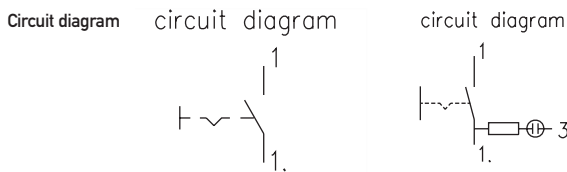
Ordering Reference	Illumination	Mounting	Rocker	Lens	Approvals ENEC	cUL
3670-201.01 1542	With	Snap-in	Black	Red	250 VAC 6 (2) A	
3670-202.01 1542	With	Snap-in	Red transparency		250 VAC 6 (2) A	
3670-001.01 1555	Without	Frameless	See below, not mounted		250 VAC 6 (2) A	
3670-017.01 1551	Without	Frameless	See below, not mounted		250 VAC 12 (2) A	
3670-010.01 1551	Without	Frameless	See below, not mounted			125 VAC 12 A
3670-004.01 1552	With	Frameless	See below, not mounted		250 VAC 6 (2) A	
3670-013.01 1552	With	Frameless	See below, not mounted		250 VAC 12 (2) A	

Preferred Range Rocker

Ordering Reference	Size (mm)	Colour	Form	Lens
136-305.0000	14 × 19.8	White		
136-304.0000	14 × 19.8	Red transparency		
136-301.0000	∅ 20	White	Round	
136-332.0000	∅ 20	Black	Round	
136-326.0000	∅ 20	Black	Round	Red
136-342.0000		Black	Elliptical	Red
136-320.0000	9.7 × 20	Red transparency		

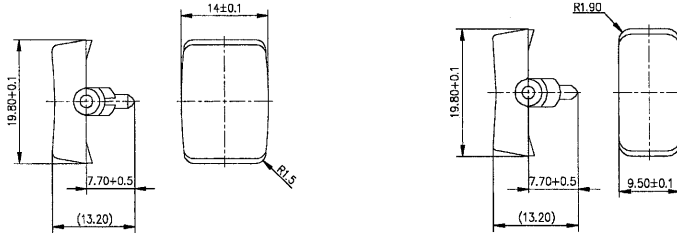
Specifications

Base	PBT
Rocker	PC
Mechanism	Single pole
Functions	ON/OFF
Contacts	Ag/Ni
Protection	IP00
Mounting	Snap-in mounting or customised
Tracking Resistance	PTI 250
Glow-wire	850°C
Switch angle	20°
Contact gap	> 3 mm

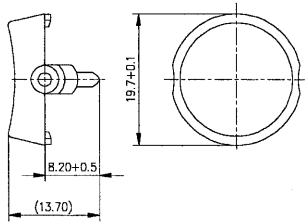


Operating Characteristics

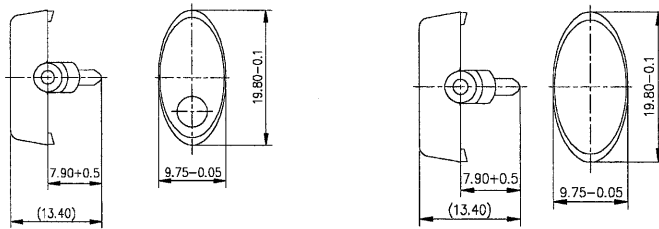
Rocker



Rocker



Rocker



Standard range switches

Ordering Reference	Illumination	Contacts (mm)	Mounting	Rocker	Lens	Rating ENEC	cUL
3670-006.01 1552	With	4,8	Frameless	See below, not mounted			125 VAC 12 A
3670-007.01 1552	With	4,8 / 90°	Frameless	See below, not mounted		250 VAC 6 (2) A	

Standard range rockers

Ordering Reference	Size (mm)	Colour	Shape	Lens
136-325.0000	∅ 20	White	Round	Red
136-346.0000		Black	Elliptical	
136-372.0000		Red transparency	Elliptical	
136-341.0000		White	Elliptical	Red
136-312.0000	9,7 × 20 mm	White		

3672

Switches

Rocker

3672

- Characteristics
- single pole
 - on/off
 - illuminated/non-illum.
 - snap-in mounting
 - solder terminals
 - PCB terminals
 - faston
 - momentary function
 - temp. 85/55°

Rating 250 VAC, 6 (2) A
125 VAC, 7.5 A

Dimensions (mm) various

Actuator ■ rockers in different shapes/colours

Approvals ENEC, UL



Preferred Range Switch

Ordering Reference	Illumination	Terminals	Shape of housing	Approvals (ENEC)
3672-722.01 1541	None	Faston 4,8 mm, bent 90°	Small	250 VAC 6 (2) A
3672-727.01 1341	None	Solder, bent 90°	Small	250 VAC 6 (2) A
3672-311.01 1541	None	Faston 4,8 mm, bent 90°	Large	250 VAC 6 (2) A
3672-515.01 1542	With	Faston 4,8 mm, bent 45°	Large	250 VAC 6 (2) A

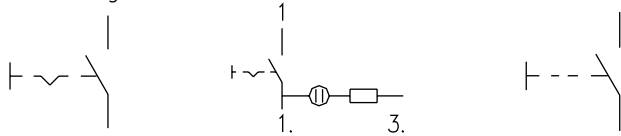
Preferred Range Rocker

Ordering Reference	Size (mm)	Colour	Form	Lens
111-342.0000	∅ 16	Black	Round	
111-337.0000	∅ 16	White	Round	Yellow
111-355.0000	∅ 20	White	Round	
111-327.0000	∅ 20	Black	Round	Red
111-439.0000	14 × 19.8	White	Square	
111-024.0167	∅ 16	Black	Adaptor	
111-026.0167	∅ 20	Black	Adaptor	

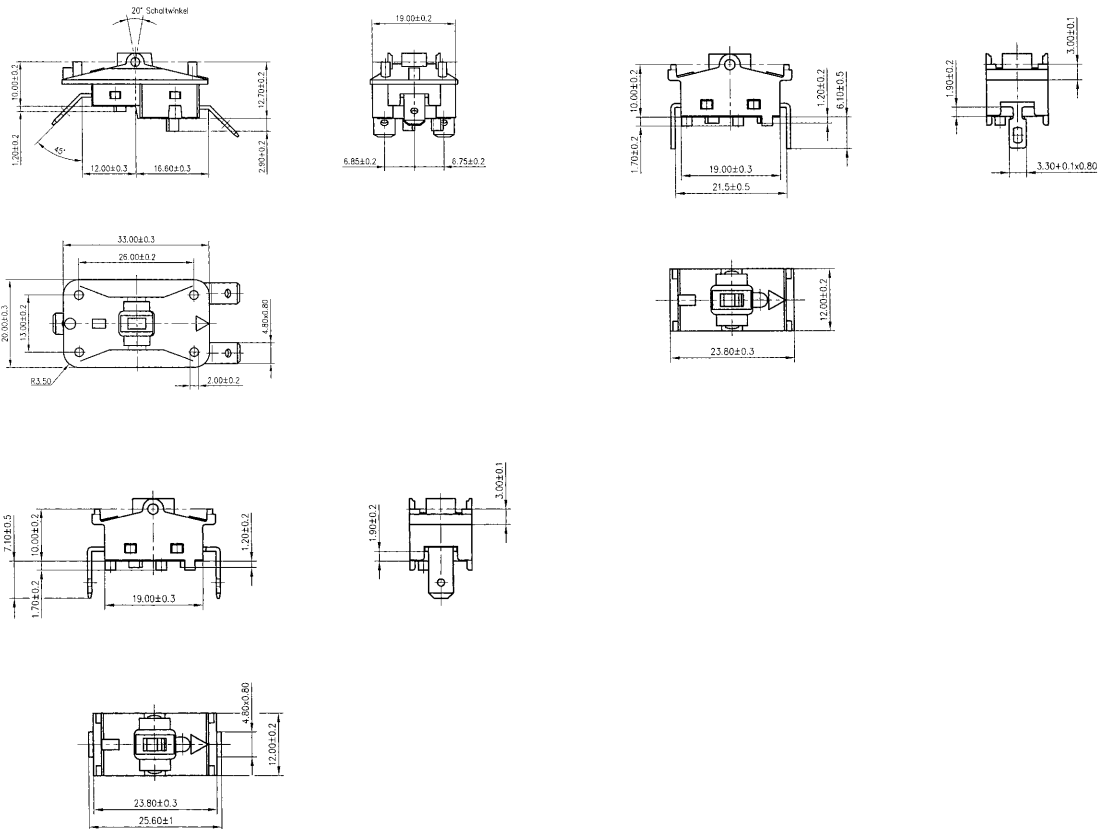
Specifications

Base	PC
Rocker	PC
Mechanism	Single pole
Functions	ON/OFF
Contacts	Ag/Ni
Terminals	Tab 4.8 / 6.3 mm, solder, PCB
Temperature range °C	85/55
Mechanical life	10.000 ENEC, 6.000 UL
Protection	IP00
Mounting	Snap-in mounting or customised
Tracking Resistance	PTI 250
Glow-wire	850°C
Switch angle	20°
Contact gap	> 3 mm

Circuit diagram circuit diagram circuit diagram circuit diagram

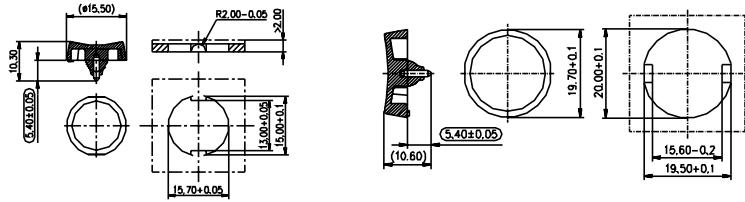


Dimensions

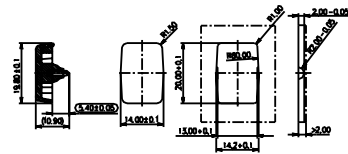


Operating Characteristics

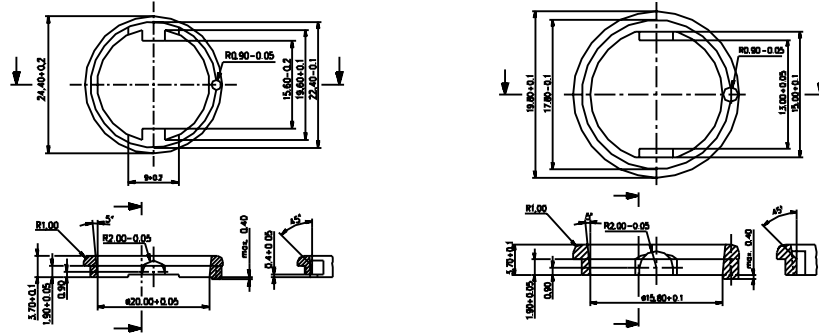
Rocker



Rocker



Adaptor



Standard range switches

Ordering Reference	Illumination	Terminals	Shape of housing	Approvals ENEC	UL
3672-720.01 1341	Without	Solder	Small	250 VAC 6 (2) A	
3672-704.01 1741	Without	Screwless	Small	250 VAC 6 (2) A	
3672-903.01 1541	Without	Faston 4,8 mm, bent 90°	Small		125 VAC 7,5 A
3672-513.01 1642	With	Faston 6,3 mm, bent 90°	Large	250 VAC 6 (2) A	
3672-726.01 1841	Without	PCB	Small	250 VAC 6 (2) A	

Standard range rockers

Ordering Reference	Size (mm)	Colour	Shape	Lens
111-340.0000	∅ 16	White	Round	
111-369.0000	∅ 20	Black		
111-323.0000	∅ 20	White	Round	Red
111-440.0000	14 × 19,8	Black	Square	
111-024.0150	∅ 16	White	Adaptor	
111-024.0198	∅ 16	Red transparency	Adaptor	
111-026.0150	∅ 20	Black	Adaptor	
111-026.0198	∅ 20	Red transparency	Adaptor	

3673

Switches

Rocker

3673

- Characteristics
- single pole
 - change-over (with or without "zero-position")
 - snap-in mounting
 - faston
 - μ -gap
 - temp. 100/55°

Rating 250 VAC, 6 (3) A
125 VAC, 10 A (for version with "zero"-position)

Dimensions (mm) various

Actuator ■ rockers in different shapes/colours

Approvals ENEC, cUL



Preferred Range Switch

Ordering Reference	Illumination	Function	Terminals	Mounting	Rocker	Approvals (ENEC)
3673-600.02 4550	None	I-II	Faston 4,8 mm	Frameless	See below, not mounted	250 VAC 6 (3) A

Preferred Range Rocker

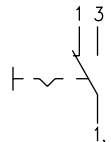
Ordering Reference	Size (mm)	Colour	Form
136-305.0000	14 x 19,8	White	Square
136-301.0000	∅ 20	White	Round
136-332.0000	∅ 20	Black	Round

Specifications

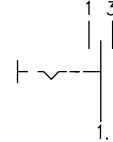
Base	PBT
Rocker	PC
Mechanism	Single pole
Functions	Change-over
Contacts	Ag/Ni
Protection	IP00
Mounting	Snap-in mounting or customised
Tracking Resistance	PTI 250
Glow-wire	850°C
Switch angle	20° I-II, 2 × 10° I-O-II
Contact gap	< 3 mm

Circuit diagram

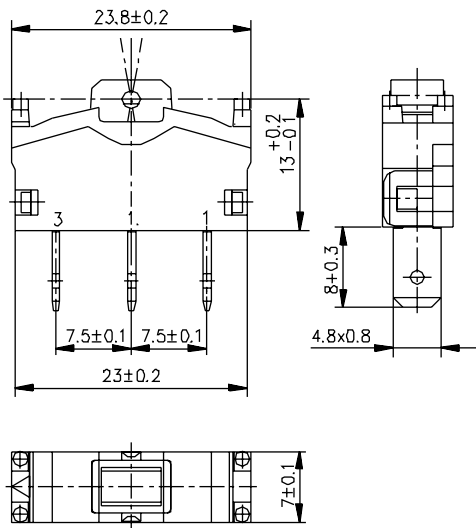
circuit diagram



circuit diagram

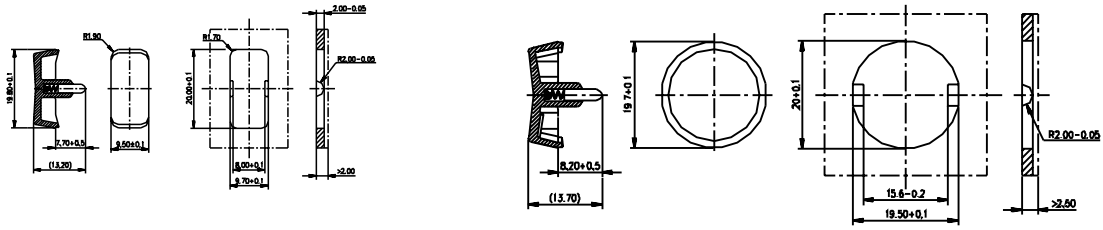


Dimensions

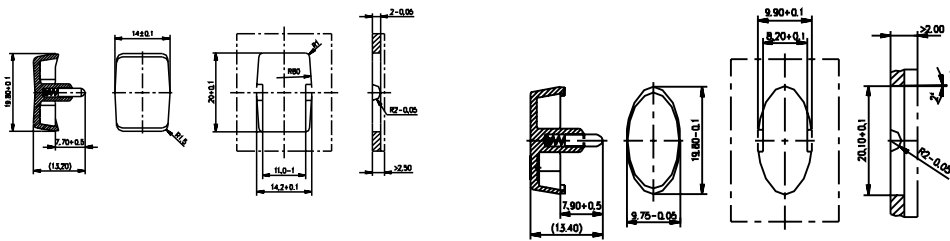


Operating Characteristics

Rocker



Rocker



Standard range switch

Ordering Reference	Illumination	Function	Terminals	Mounting	Rocker	Approvals ENEC	UL
3673-001.01 4551	None	I-0-II	Faston 4,8 mm	Snap-in	Black	250 VAC 6 (3) A	
3673-101.01 4551	None	I-0-II	Faston 4,8 mm	Snap-in	Black		125 VAC 10 A
3673-502.01 4551	None	I-II	Faston 4,8 mm	Snap-in	Black	250 VAC 6 (3) A	
3673-200.01 4550	None	I-0-II	Faston 4,8 mm	Frameless	See below, not mounted	250 VAC 6 (3) A	

Standard range rocker

Ordering Reference	Size (mm)	Colour	Shape
136-312.0000	9,7 × 20	White	Square
136-346.0000		Black	Elliptical

3680

Switches

Rocker

3680

- Characteristics
- single pole
 - on/off
 - illuminated/non-illum.
 - snap-in mounting
 - faston
 - optional with momentary function
 - temp. 85/55°

Rating 250 VAC, 6 (2) A
125 VAC, 7.5 A

Dimensions (mm) Various

Actuator Rockers in different shapes/colours

Approvals ENEC, UL, CSA



Preferred Range Switch

Ordering Reference	Illumination	Terminals	Mounting	Rocker	Lens	Housing	Approval ENEC	UL
3680-012.01 1651	None	Faston 6,3 mm	Snap-in	Black		Black	250 VAC 6 (2) A	
3680-561.01 1552	With	Faston 4,8 mm	Snap-in	Black	Red	Black	250 VAC 6 (2) A	
3680-805.01 1552	With	Faston 4,8 mm	Snap-in	Black	Red	Black		125 VAC 7,5 A
3680-031.01 1541	None	Faston 4,8 mm	Customised	See below, not mounted		White	250 VAC 6 (2) A	
3680-401.01 1542	With	Faston 4,8 mm	Customised	See below, not mounted		White	250 VAC 6 (2) A	
3680-402.01 1642	With	Faston 6,3 mm	Customised	See below, not mounted		White	250 VAC 6 (2) A	
3680-408.01 1642	With	Faston 6,3 mm	Customised	See below, not mounted		White		125 VAC 7,5 A

Preferred Range Rocker

Ordering Reference	Size (mm)	Colour	Form	Lens
131-350.0000	9,2 × 25	Black	Square	
131-321.0000	10,5 × 25	Red transparency	Square	
131-455.0000		Black	Elliptical	Red
131-465.0000		Red transparency	Elliptical	

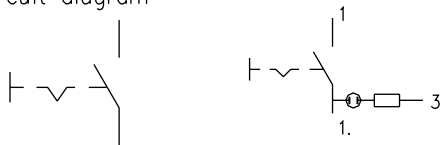
Specifications

Base	PA
Rocker	PC
Mechanism	Single pole
Functions	ON/OFF
Contacts	Ag/Ni
Terminals	Tab terminals 4.8 mm / 6.3 mm
Temperature range °C	85/55
Mechanical life	10.000 ENEC / 6.000 UL CSA
Protection	IP00
Mounting	Snap-in mounting or customised
Tracking Resistance	PTI 250
Glow-wire	850°C
Switch angle	13°
Contact gap	3 mm

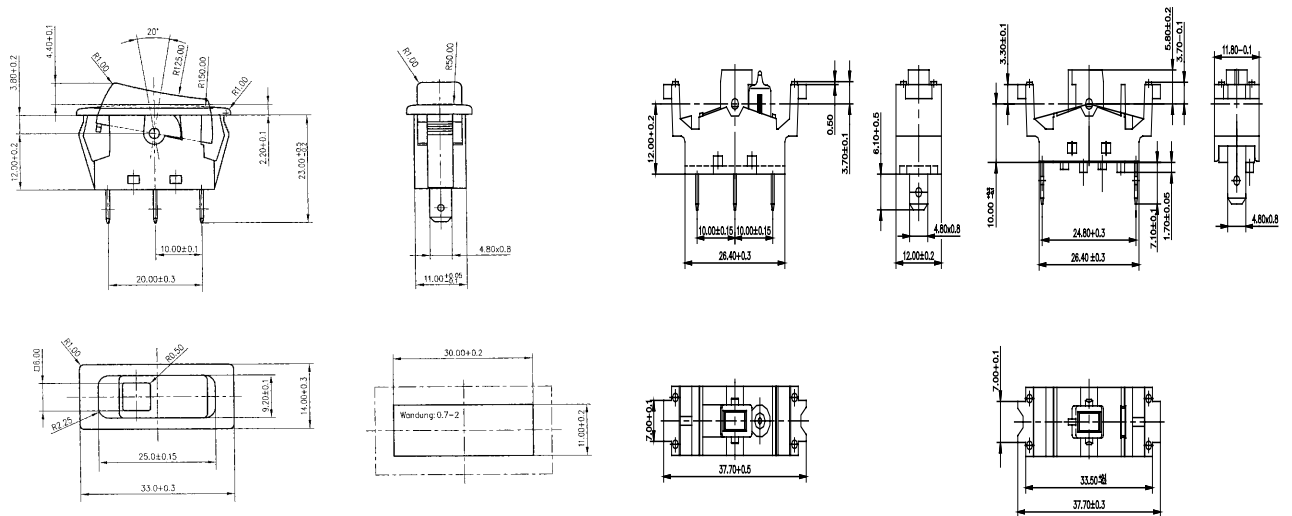
Circuit diagram

circuit diagram

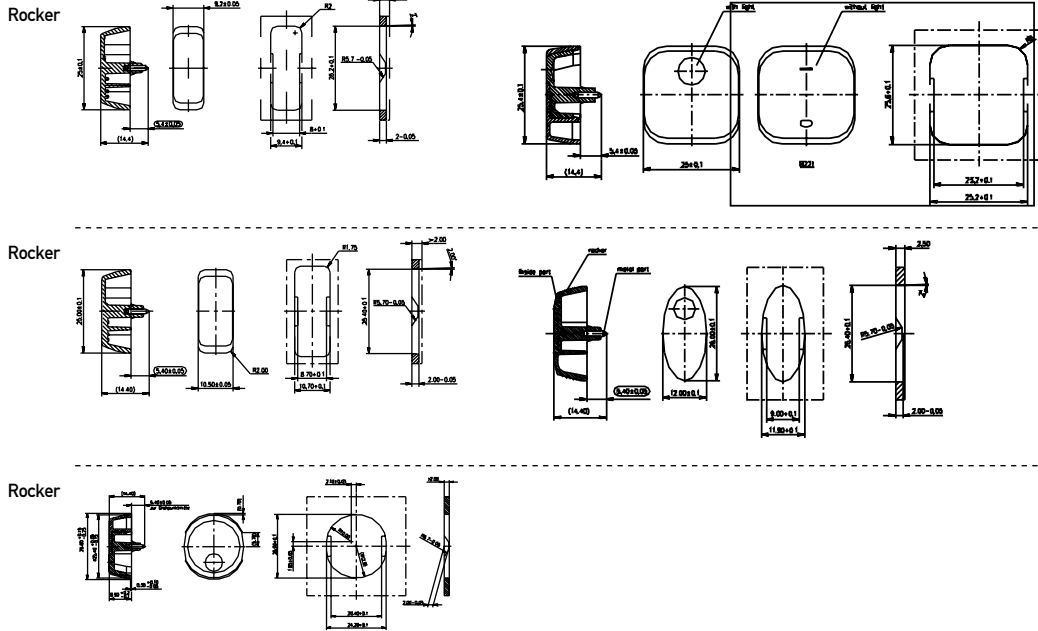
circuit diagram



Dimensions



Operating Characteristics



Standard range switch

Ordering Reference	Illumination	Terminals	Mounting	Rocker	Lens	Housing	Approval ENEC	UL
3680-002.01 1651	Without	Faston 6,3 mm	Snap-in	White		White	250 VAC 6 (2) A	
3680-502.01 1652	With	Faston 6,3 mm	Snap-in	White	Red	White	250 VAC 6 (2) A	
3680-506.01 1652	With	Faston 6,3 mm	Snap-in	Red transparency		White	250 VAC 6 (2) A	
3680-407.01 1542	With	Faston 4,8 mm	Customised	See below, not mounted		White		125 VAC 7,5 A

Standard range rocker

Ordering Reference	Size (mm)	Colour	Shape	Lens
131-352.0000	9.2 × 25	Red transparency	Square	
131-330.0000	10,5 × 25	Black	Square	
131-343.0000	25	Black	Square	
131-327.0000	25	White	Square	Red
131-454.0000		White	Elliptical	Red
131-471.0000	∅ 25,4	Black	Round	Red

TIPPMATIC®

Switches

Auto-Shut-Off

TIPPMATIC®

- Characteristics
- integral timer function
 - single pole
 - on/off
 - illuminated/non-illum.
 - snap-in mounting
 - temp. 100/55°

Rating 250 VAC, 12 (4) A
125 VAC, 15 A

Dimensions (mm) 37.2 × 17 × ~38

Actuator ■ standard rocker 25.4 × 10.7 mm

Approvals ENEC, cUL



Preferred Range Switch

Ordering Reference	Illumination	Terminals 4,8	Time delay		Approvals ENEC
			50 Hz	60 Hz	
3600-411.27 1552	With	Faston 4,8 mm	15 min.	12.5 min.	250 VAC 12 (4) A
3600-414.27 1552	With	Faston 4,8 mm	120 min.	100 min.	250 VAC 12 (4) A
3600-412.27 1552	With	Faston 4,8 mm	30 min.	25 min.	250 VAC 12 (4) A

Preferred Range Switch cover

Ordering Reference	Size (mm)	Colour
100-012.0152	10,5 × 25	white
100-012.0167	10,5 × 25	black

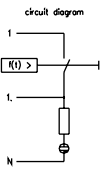
Preferred Range Adapter

Ordering Reference	Size (mm)	Colour	Size	Wall thickness
100-071.0150		white	43,7 × 17,8 mm	2,5 ± 0,5 mm
100-071.0167		black	43,7 × 17,8	2,5 ± 0,5 mm

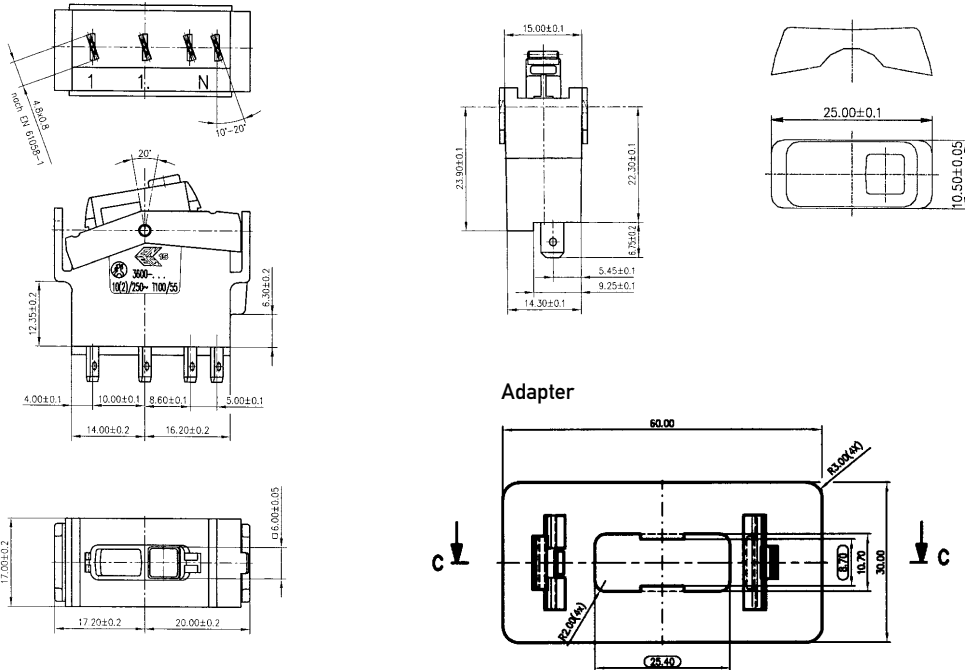
Specifications

Base	PA
Rocker	PC
Mechanism	Single pole
Functions	ON/OFF
Contacts	Ag/Ni
Protection	IP00
Mounting	Snap-in mounting or customised
Tracking Resistance	PTI 250
Glow-wire	850°C
Contact	Gap 3 mm

Circuit diagram



Dimensions



Production range switches

Ordering Reference	Illumination	Terminals 4,8	Time delay		Approvals ENEC	cUL
			50 Hz	60 Hz		
3600-410.27 1552	With	Faston 4,8 mm	5 min.	4,1 min.	250 VAC 12 (4) A	
3600-413.27 1552	With	Faston 4,8 mm	60 min.	50 min.	250 VAC 12 (4) A	
3600-419.27 1542	Without	Faston 4,8 mm	30 min.	25 min.	250 VAC 12 (4) A	
3600-510.27 1542	With	Faston 4,8 mm	5 min.	4,1 min.		125 VAC 15 A
3600-512.27 1542	With	Faston 4,8 mm	30 min.	25 min.		125 VAC 15 A
3600-513.27 1542	With	Faston 4,8 mm	60 min.	50 min.		125 VAC 15 A



Terminology: Manual operated switches

Definitions of different switch types

Rocker switch

Switch, the actuating member of which is a low profile lever (rocker) which has to be tilted to one or more indexed positions in order to achieve a change in contact state.

Push-button switch

Switch, the actuating member of which is a button which has to be pushed in order to achieve a change in contact state.

Rotary switch

Switch, the actuating member of which is a shaft or a spindle which has to be rotated to one or more indexed positions in order to achieve a change in contact state.

Slide switch

Switch, the actuating member of which is a slide which has to be slide to one or more indexed positions in order to achieve a change in contact state.

Operating Characteristics

Actuating force

The force which is required to move the actuator and contact system from the free to the operating position

Free position

The position of the actuator when no external force is applied

Operating Position

The position of the actuator when the contact has change over the state take place

Detent position

The position of the actuator when the system is in stable operating position

Overtravel

Movement of the switch beyond the operating position

Release force

The value to which the applied force must be reduced to allow the mechanism to reset after operation

Total Travel

The complete movement of the actuator

Approvals

Almost all of Saia Burgess switches are tested and approved according to EN 61058-1 resp. IEC 61058-1 and UL 1054.

The corresponding certificates are available on request.

Approval marks, certification marks

ENEC – Mark, the switch fulfils European (EN) Standards. The two digits numbers indicates which certification body has issued the ENEC Certificate.

UL UR-Mark recognized compount mark for the USA

cULus-Mark for Canada and USA



CE Mark, administration mark

The CE Mark is an administrative mark, which often is mistake as a certification mark.

This mark indicates the conformity of a product with the EC Directives and can be affixed themselves by the manufacture. For almost all of Saia-Burgess switches the basis for the EC Declaration is the full compliance with the corresponding standard.

To bear the CE- Mark on the component It is not prescribed. Present is the CE Mark on the smallest packing unit.

Explosionsproof IEC60079-15:1987

The switch must withstand an internal explosion without igniting a surrounding gas mixture.

Resistance to tracking

The resistance to tracking (PTI / CTI values) indicates the maximum voltage which a material withstands a definite quantity of drops of test solution without tracking.

Resistance to head and fire:

The materials pass the glow-wire test level 5 carried out at 850°C

Electrical rating

The maximum permissible electrical load is specified for the respective switch series. Most of Saia Burgess switches are suitable for both resistive and motor loads. The rated current for the motor load is specified in brackets, e.g. 16 (4) A 250 V ac.

Information about ratings for direct current (DC) will be provided on request.

Type of load: ENEC / IEC

Resistive load; circuit for a substantially load with a power factor of not less than 0,9 Marking for example 16A

Inductive load; circuit for either a resistive load, a inductive (motor) load with a power factor not less than 0,6 or a combination of both.

Marking for example 16(4)A

Lamp Loads; circuit for ordinary tungsten filament lamp load

Marking for example 16[2]A

Type of load: UL

HP load; circuit for a motor load with a power factor not less than 0,4

Marking for example _ HP

EMC (Spurious Radiation / Spurious Emission)

EMC requirements are not applicable for manual operated switch and required only for electronic switches resp. electronic components or electronic circuits.

Please your attention, when installed in other products or as a part of an assembly, the EMC characteristics can be affected and the test must be repeated on the end use product.

Ambient temperature

The marking e.g. T 100 means that the switch is approved by the European approval authorities (according to EN 61058-1 resp. IEC 61058-1) for the max. ambient temperature of 100 °C. The marking T 100/55 means, that the terminal side of the switch is suitable for an ambient temperature of 100 °C and the ambient temperature for an actuating element (e.g. the rocker) reduced is of 55 °C.

For **USA** approved switches the ambient temperature is determined by the RTI Relative Temperature Index) of the materials used. Temperatures are available on request.

Switch Technology

Clearance Distance

The distance in air between conductive parts or between conductive parts and a surface which can be contacted by persons when the switch is installed.

Creepage Distance

The path along the surface of insulating material between conductive parts or between conductive parts and a surface which can be contacted by persons when the switch is installed

Insulation Resistance

The resistance for reinforced insulation shall be not less than 7 MOhms between all live parts connected together and a metal foil covering to a accessible surface

Functions:

On-off function switch, or momentary

Change over

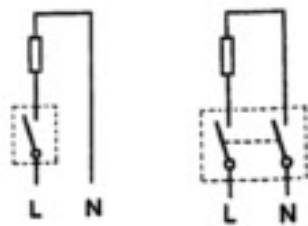
On-off function in two directions with or without zero position, or momentary Multiple function On – step- off function e.g I – II – 0 positions, or momentary

Pole

Part of the switch which exclusively is assigned to an electrically separate conducting path of the switch.

A single-pole switch has only one pole (two terminals)

A double-pole switch has two-poles (four terminals)



Number of cycles:

According to EN 61058-1 normally cycles 10.000 (1E4), frequent operation 50.000 cycles (5E4)

According to UL 1054 normally 6.000 cycles

Contact Materials

Terminals

Copper or and copper alloy

Contact-point

Silver or silver alloy Ag Ni 90/10 are primary contact materials used in Saia-Burgess manual operated switches






Gold-plated contacts on request

Contact disconnection

The most of the switches have a contact disconnection of ≥ 3 mm.

Switches with a contact disconnection of < 3 mm are marked by the sign μ .

Terminals

-  Tab terminal
-  Solder terminal
-  PCB terminal
-  bush-terminal
-  Screw less terminal

Switch Actuation / Design

Customer specified on request.

Haptic

Haptic perception contains all aspects of the touch under use of the hands. The surface compositions of the activity elements as well as the haptic re-registration of the contact systems are included. Various sorts of surfaces and switch force characteristics are available.

Switching easily possible with feeling means: Comfortable switch.

Optic

Surfaces and design are the essential distinctive marks of the applications today. Based on standard switches individual designs can be made come true by different actuators. Surfaces can be represented by structures or also painted surfaces.

Signal indicator

The illumination of a switch is a component to indicate the circuit state visually, for which we used glow-lamps or LED's .

There are the rockers in completely transparently or with one special shining window. For this it is important that the lateral shining effect also makes this one a side view possible.

Glow lamp or LED been used for illumination. Customer specified on request. The color is eligible for office according to customer wish.

Environmental Protection

Protection Classifications (IP- Code)

The first figure is the protection against solids
The second figure is the protection against water
For example

IP40

Adequate protection against solids such as probing finger and small wires > 1 mm. Liquids however can again access and, unless externally protection, the switches should be mounted in dry or well-sheltered positions

IP54

Good protection against solid foreign bodies, including dust and water splashing against the enclosure from any direction. Switches may be used out of doors if sheltered from the worst of the elements or on factory machines subjected to normal washing down procedures

IP65

Complete protection against solids, including dust and against low pressure jets of water from all directions

IP67

Complete protection against solids including dust and against immersion in water at a specific pressure for a specified time.

Please pay attention that information concerning the IP – Code for these products are, if not otherwise specified, only for the actuating side. The sealing between switch and the end use application must be tested by the customer.

EU Directive 2002/95/EC (RoHS)

All switches are free of banned substances

Possible combination / Pre-wiring

Switch drawing

All drawings in this catalogue are third angle projection. All dimensions in this catalogue are nominal, except where specifically shown.

Health & Safety

Saia-Burgess has ensured, so far as it is reasonably practicable, that their products as described in this catalogue or in other current company publications, or as specified on Saia-Burgess installation drawings. They have been so designed and constructed as to be safe and without risk to health when installed by suitably qualified personnel in accordance with relevant legislation, codes of practice, regulations (including IEE Wiring Regulations), the installation recommendations offered by the company and the accepted rules of the art. Their usage should be confined within the ratings limitations and parameters of application indicated in this catalogue and elsewhere.

Please contact us should you need additional information or guidance.

Service Recommendations

Maintenance

Saia-Burgess switches are not user-maintainable but they should be kept in a reasonably clean, paint-free condition, especially in the actuator area. Regular checks should be made on mounting security and on the actuating medium to switch actuator relationship.

Lubrication or the use of aqueous or chemical cleaning fluids is not recommended.

Installation Recommendations

The user is responsible for the proper installation under consideration of the respectively valid norms

Safety consideration

Installation should only be carried out by competent personnel

General note

All data specified in this catalogue are not binding and we reserve the right to alter a product in accordance with technical improvements without notice. Binding data are available after clarification of all relevant conditions on request.

Panel Mounted

Range:	Type	Popular Products	Popular Products	Page
Push Button	TP2	TP21LAAC1C1A4CN TP21LDAC1C1D4CN TP21MAAC1C1A4CN	TP21MDAC1C1D4CN TP22LFAC1C1F4CN TP22MFAC1C1F4CN	220
	TP5	TP51LAA2A4CN TP51LDA2D4CN TP51MAA2A4CN	TP51MDA2D4CN TP52LFD2F4CN TP52MFD2F4CN	227
	TP4	TP41LAJ2A4NXX TP41LEJ2E4NXX TP41MAJ2A4NXX	TP41MEJ2E4NXX TP42LHJ2H4NXX TP42MHJ2H4NXX	232
	TP8	TP82MDOA30		236
	TP9	TP92MFOA000 TP92MFOA002	TP92MFOA004 TP92MFOA005	239
	TP7	TP71MD1B04XX TP71MD1B02XX TP71MD1B05XX TP71MD1B00XX	TP72MF1B00XX TP72MG4B00C2 TP72MG2B00C4	243
	3300	3300-001 3300-003 3300-002 3300-004		251
Indicators	TI2	TI21VAAF4CN	TI22VFAF4CN	252
	TI5	TI51VALA4CN	TI52VFSF4CN	257
	TI9	TI92VFOA500		261
Emergency Stop	TE8	TE82KJB1XX	TE81RGP2A1	264
Keyswitch	TK2	TK21B2A001C1C1A	TK22B2E001C1C1E	268
Rotary	TR2	TR21A2AC1C1A TR22A2CC1C1E	TR21C2AC1C1A TR22C2CC1C1E	274

TP2

Panel Mounted

Push Button

TP2

Panel cut-out (mm) \varnothing 16.2 or \varnothing 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
 \varnothing 18
 \varnothing 25

Actuator ■ lenses in different shapes and colours

Approvals UL, CSA, VDE



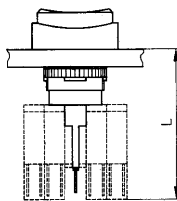
Popular products

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

Specifications

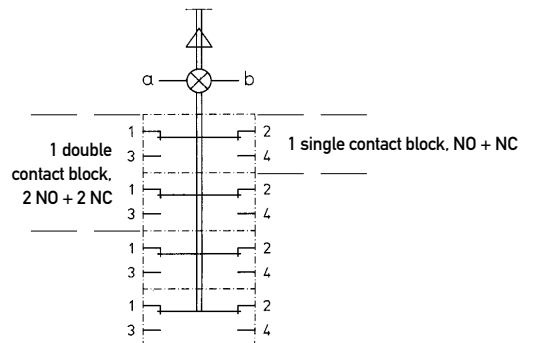
Mechanism	Bi-functional – momentary or latching
Actuating force	Approximately 2.5N – 1 contact block
Mounting	Central fixing with metal lock nut
Protection	IP40, IP65, IP67
Bezel material	Thermoplastic or anodized aluminium alloy
Lens material	Polycarbonate – engravable
Illumination	T1 ¾ midget grooved 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

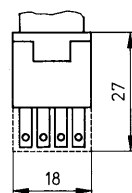
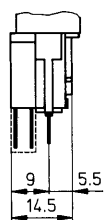


Length in mm (with contact block)	
plastic bezels	43.0
aluminium bezels	42.0
aluminium bezels concealed mounting	50.0

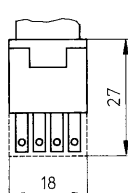
Circuit diagram (2 double contact blocks)



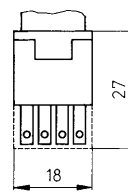
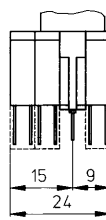
Contact blocks 1 single contact block



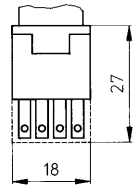
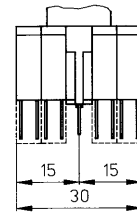
2 single contact blocks



1 single contact block + 1 double contact block



2 double contact blocks

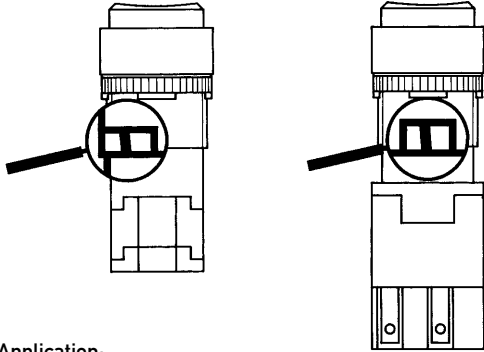


Recommended maximum electrical ratings

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

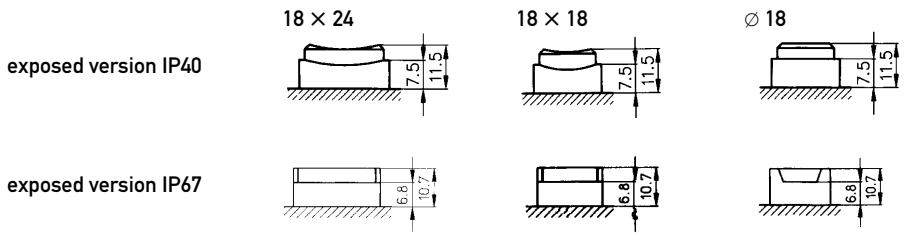
All latching switches in the range incorporate a simple selector mechanism for modifying the function of the switch. This function is not available with momentary switches.



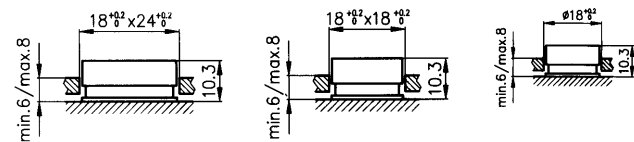
Application:

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.

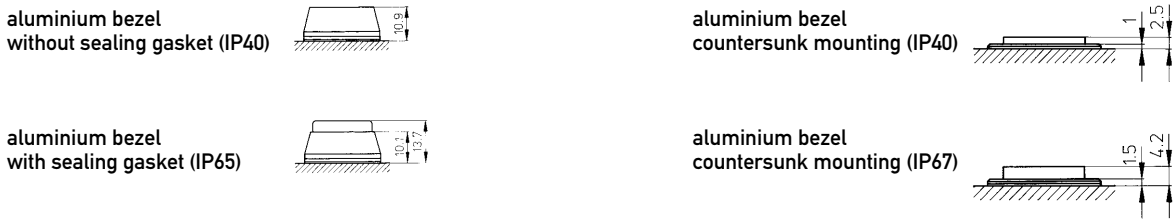
Plastic bezel and lens heights in mm (switch off position)



Panel cut-out exposed version 16.2 ± 0.1 mm



Aluminium bezel $\varnothing 25$ and lens heights in mm (switch off position)



Panel cut-out 22.5 ± 0.1 mm

Front panel thickness	plastic bezel	1.0 mm to 6.5 mm
	aluminium bezel	1.0 mm to 5.0 mm
	countersunk mounting	2.0 mm to 15.0 mm

Type coding key for standard products

Basic type	TP2						Example: TP2	1	MAA	A1	A1	A0	A	N
Panel cut-out	1	Ø 16.2 mm												
Switch body		Function	Actuator	Housing (plastic)	Part No.									
(A)	MAA	Momentary	18 × 24 mm	Exposed ; IP40; faston	TH501008000									
	MAB	Momentary	18 × 24 mm	Concealed ; IP40; faston	TH501002000									
	MAC	Momentary	18 × 24 mm	Exposed ; IP67; faston	TH501015000									
	LAA	Latching_	18 × 24 mm	Exposed ; IP40; faston	TH511008000									
	LAB	Latching_	18 × 24 mm	Concealed ; IP40; faston	TH511002000									
	LAC	Latching_	18 × 24 mm	Exposed ; IP67; faston	TH511015000									
(B)	MBA	Momentary	18 × 18 mm	Exposed ; IP40; faston	TH503008000									
	MBB	Momentary	18 × 18 mm	Concealed ; IP40; faston	TH503002000									
	MBC	Momentary	18 × 18 mm	Exposed ; IP67; faston	TH503015000									
	LBA	Latching_	18 × 18 mm	Exposed ; IP40; faston	TH513008000									
	LBB	Latching_	18 × 18 mm	Concealed ; IP40; faston	TH513002000									
	LBC	Latching_	18 × 18 mm	Exposed ; IP67; faston	TH513015000									
(C)	MDA	Momentary	Ø 18 mm	Exposed ; IP40; faston	TH505008000									
	MDB	Momentary	Ø 18 mm	Concealed ; IP40; faston	TH505002000									
	MDC	Momentary	Ø 18 mm	Exposed ; IP67; faston	TH505015000									
	LDA	Latching_	Ø 18 mm	Exposed ; IP40; faston	TH515008000									
	LDB	Latching_	Ø 18 mm	Concealed ; IP40; faston	TH515002000									
	LDC	Latching_	Ø 18 mm	Exposed ; IP67; faston	TH515015000									
Contact block, gold				Terminals	Part No.									
Position 1	XX	No Contact Blocks												
	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				Terminals	Part No.									
Position 2	XX	No Contact Blocks												
	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			Exposed	Concealed	Exposed IP40	Concealed IP 40	Exposed IP67							
For Switch	A0	White	15 × 21 mm	18 × 24 mm	TH461021000	TH461017000	TH561011000							
body style (A)	A1	Yellow	15 × 21 mm	18 × 24 mm	TH461121000	TH461117000	TH561111000							
	A2	Green	15 × 21 mm	18 × 24 mm	TH461221000	TH461217000	TH561211000							
	A3	Blue	15 × 21 mm	18 × 24 mm	TH461321000	TH461317000	TH561311000							
	A4	Red	15 × 21 mm	18 × 24 mm	TH461421000	TH461417000	TH561411000							
	A6	Orange	15 × 21 mm	18 × 24 mm	TH461621000	TH461617000	TH561611000							
For Switch	B0	White	15 × 15 mm	18 × 18 mm	TH463021000	TH463018000	TH563011000							
body style (B)	B1	Yellow	15 × 15 mm	18 × 18 mm	TH463121000	TH463118000	TH563111000							
	B2	Green	15 × 15 mm	18 × 18 mm	TH463221000	TH463218000	TH563211000							
	B3	Blue	15 × 15 mm	18 × 18 mm	TH463321000	TH463318000	TH563311000							
	B4	Red	15 × 15 mm	18 × 18 mm	TH463421000	TH463418000	TH563411000							
	B6	Orange	15 × 15 mm	18 × 18 mm	TH463621000	TH463618000	TH563611000							
For Switch	D0	White	Ø 15 mm	Ø 18 mm	TH465021000	TH465015000	TH565011000							
body style (C)	D1	Yellow	Ø 15 mm	Ø 18 mm	TH465121000	TH465115000	TH565111000							
	D2	Green	Ø 15 mm	Ø 18 mm	TH465221000	TH465215000	TH565211000							
	D3	Blue	Ø 15 mm	Ø 18 mm	TH465321000	TH465315000	TH565311000							
	D4	Red	Ø 15 mm	Ø 18 mm	TH465421000	TH465415000	TH565411000							
	D6	Orange	Ø 15 mm	Ø 18 mm	TH465621000	TH465615000	TH565611000							
Illumination	X	Non illuminated												
	A	6V												
	B	12V												
	C	24V												
	F	48V												
Illumination Colour	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

Type coding key for standard products

Basic type	TP2						Example: TP2	1	MAD	A1	A1	A0	A	N
Panel cut-out	1	Ø 16.2 mm												
Switch body (A)	MAD	Function	Actuator	Housing (plastic)	Part No.									
	MAE	Momentary	18 × 24 mm	Exposed : IP40; solder	TH501108000									
	MAF	Momentary	18 × 24 mm	Concealed : IP40; solder	TH501102000									
	LAD	Latching_	18 × 24 mm	Exposed : IP67; solder	TH501115000									
	LAE	Latching_	18 × 24 mm	Exposed : IP40; solder	TH511108000									
	LAE	Latching_	18 × 24 mm	Concealed : IP40; solder	TH511102000									
	LAF	Latching_	18 × 24 mm	Exposed : IP67; solder	TH511115000									
	(B)	MBD	Momentary	18 × 18 mm	Exposed : IP40; solder	TH503108000								
		MBE	Momentary	18 × 18 mm	Concealed : IP40; solder	TH503102000								
		MBF	Momentary	18 × 18 mm	Exposed : IP67; solder	TH503115000								
		LBD	Latching_	18 × 18 mm	Exposed : IP40; solder	TH513108000								
		LBE	Latching_	18 × 18 mm	Concealed : IP40; solder	TH513102000								
		LBF	Latching_	18 × 18 mm	Exposed : IP67; solder	TH513115000								
	(C)	MDD	Momentary	Ø 18 mm	Exposed : IP40; solder	TH505108000								
		MDE	Momentary	Ø 18 mm	Concealed : IP40; solder	TH505102000								
		MDF	Momentary	Ø 18 mm	Exposed : IP67; solder	TH505115000								
		LDD	Latching_	Ø 18 mm	Exposed : IP40; solder	TH515108000								
		LDE	Latching_	Ø 18 mm	Concealed : IP40; solder	TH515102000								
LDF		Latching_	Ø 18 mm	Exposed : IP67; solder	TH515115000									
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 15 × 21 mm	Concealed 18 × 24 mm	Exposed IP40 TH461021000	Concealed IP 40 TH461017000	Exposed IP67 TH561011000						
		A1	Yellow	15 × 21 mm	18 × 24 mm	TH461121000	TH461117000	TH561111000						
		A2	Green	15 × 21 mm	18 × 24 mm	TH461221000	TH461217000	TH561211000						
	A3	Blue	15 × 21 mm	18 × 24 mm	TH461321000	TH461317000	TH561311000							
	A4	Red	15 × 21 mm	18 × 24 mm	TH461421000	TH461417000	TH561411000							
	A6	Orange	15 × 21 mm	18 × 24 mm	TH461621000	TH461617000	TH561611000							
	For Switch body style (B)	B0	White	15 × 15 mm	18 × 18 mm	TH463021000	TH463018000	TH563011000						
B1		Yellow	15 × 15 mm	18 × 18 mm	TH463121000	TH463118000	TH563111000							
B2		Green	15 × 15 mm	18 × 18 mm	TH463221000	TH463218000	TH563211000							
B3		Blue	15 × 15 mm	18 × 18 mm	TH463321000	TH463318000	TH563311000							
B4		Red	15 × 15 mm	18 × 18 mm	TH463421000	TH463418000	TH563411000							
B6		Orange	15 × 15 mm	18 × 18 mm	TH463621000	TH463618000	TH563611000							
For Switch body style (C)	D0	White	Ø 15 mm	Ø 18 mm	TH465021000	TH465015000	TH565011000							
	D1	Yellow	Ø 15 mm	Ø 18 mm	TH465121000	TH465115000	TH565111000							
	D2	Green	Ø 15 mm	Ø 18 mm	TH465221000	TH465215000	TH565211000							
	D3	Blue	Ø 15 mm	Ø 18 mm	TH465321000	TH465315000	TH565311000							
	D4	Red	Ø 15 mm	Ø 18 mm	TH465421000	TH465415000	TH565411000							
	D6	Orange	Ø 15 mm	Ø 18 mm	TH465621000	TH465615000	TH565611000							
Illumination	X	Non illuminated												
	A	6V												
	B	12V												
	C	24V												
Illumination Colour	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

Type coding key for standard products

Basic type	TP2					Example: TP2	2	MFA	A1	A1	E0	A	N
Panel cut-out	2					Ø 22.5 mm							
Switch body (A)	MFA	Function	Actuator	Housing	Part No.								
	LFA	Momentary	Ø 25	Exposed plastic; IP65; faston	TH505020000								
	LFA	Latching_	Ø 25	Exposed plastic; IP65; faston	TH515020000								
	(B)	MFB	Momentary	Ø 25	Exposed aluminium; IP40 / IP65*; faston	TH505018000							
		LFB	Latching_	Ø 25	Exposed aluminium; IP40 / IP65*; faston	TH515018000							
		MFC	Momentary	Ø 25	Exposed aluminium; IP65* with silicon cap; faston	TH505033000							
		LFC	Latching_	Ø 25	Exposed aluminium; IP65* with silicon cap; faston	TH515033000							
		MFD	Momentary	Ø 25	Flush-aluminium; IP40; faston	TH505050000							
		LFD	Latching_	Ø 25	Flush-aluminium; IP40; faston	TH515050000							
	MFE	Momentary	Ø 25	Flush-aluminium; IP67; faston	TH505051000								
	LFE	Latching_	Ø 25	Flush-aluminium; 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						
	F1	Yellow	Ø 18	TH465115000	TH465001000	TH465101000	TH565025000						
	F2	Green	Ø 18	TH465215000	TH465201000	TH465301000	TH565125000						
	F3	Blue	Ø 18	TH465315000	TH465401000	TH465501000	TH565225000						
	F4	Red	Ø 18	TH465415000	TH465601000	TH465701000	TH565325000						
	F6	Orange	Ø 18	TH465615000	TH465801000	TH465901000	TH565425000	} For Aluminium Bezel only					
Illumination	X	Non illuminated											
	A	6V											
	B	12V											
	C	24V											
	F	48V											
Illumination Colour	X	Non illuminated											
	N	Incandescent lamp		6V, 200 mA	12V, 80 mA	24V, 50 mA	48V, 25 mA						
				TH590000000	TH590001000	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						

Note: Contact blocks will be supplied unassembled

Type coding key for standard products

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 aluminium; IP40 / IP65*; solder	TH505118000							
	LFG	Latching	Ø 25	Exposed aluminium; IP40 / IP65*; solder	TH515118000								
	MFH	Momentary	Ø 25	Exposed aluminium; IP65* with silicon cap; solder	TH505133000								
	LFH	Latching	Ø 25	Exposed aluminium; IP65* with silicon cap; solder	TH515133000								
	MFJ	Momentary	Ø 25	Flush-aluminium; IP40; solder	TH505150000								
	LFJ	Latching	Ø 25	Flush-aluminium; IP40; solder	TH515150000								
	MFK	Momentary	Ø 25	Flush-aluminium; IP67; solder	TH505151000								
LFK	Latching	Ø 25	Flush-aluminium; 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 Silicon cap TH465001000	IP67 TH565025000	} For Aluminium 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 Colour	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	6V AC/DC, 45 mA	TH590232000	12V AC/DC, 25 mA TH590235000	24V AC/DC, 12.5 mA TH590238000	48V AC/DC, 12.5 mA TH590241000						
	4	Red LED	6V AC/DC, 45 mA	TH590230000	12V AC/DC, 25 mA TH590233000	24V AC/DC, 12.5 mA TH590236000	48V AC/DC, 12.5 mA TH590239000						

Note: Contact blocks will be supplied unassembled

TP5

Panel Mounted

Push Button

TP5

Panel cut-out (mm) \varnothing 16.2 or \varnothing 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
 \varnothing 18
 \varnothing 25

Actuator ■ lenses in different shapes and colours

Approvals UL, CSA, VDE



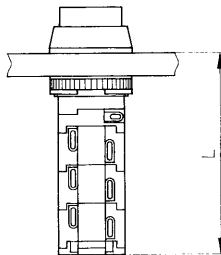
Popular Products

Ordering Reference	Panel cut-out	Function	Actuator style	Terminals	Electrical rating
TP51LAA2A4CN	\varnothing 16.2 mm	Latching; IP40	18 × 24 mm, red Illumination	Solder; gold	250 VAC, 5A
TP51LDA2D4CN	\varnothing 16.2 mm	Latching; IP40	\varnothing 18 mm, red Illumination	Solder; gold	250 VAC, 5A
TP51MAA2A4CN	\varnothing 16.2 mm	Momentary; IP40	18 × 24 mm, red Illumination	Solder; gold	250 VAC, 5A
TP51MDA2D4CN	\varnothing 16.2 mm	Momentary; IP40	\varnothing 18 mm, red Illumination	Solder; gold	250 VAC, 5A
TP52LFD2F4CN	\varnothing 22.5 mm	Latching; IP40	\varnothing 25 mm, red Illumination	Solder; gold	250 VAC, 5A
TP52MFD2F4CN	\varnothing 22.5 mm	Momentary; IP40	\varnothing 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 aluminium alloy
Lens material	Polycarbonate – engravable
Illumination	T13/4 midget 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

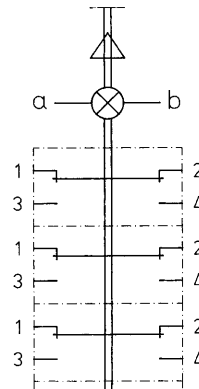
Dimensions



Length in mm (countersunk mounting version)

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

Circuit diagram (3 contact blocks)

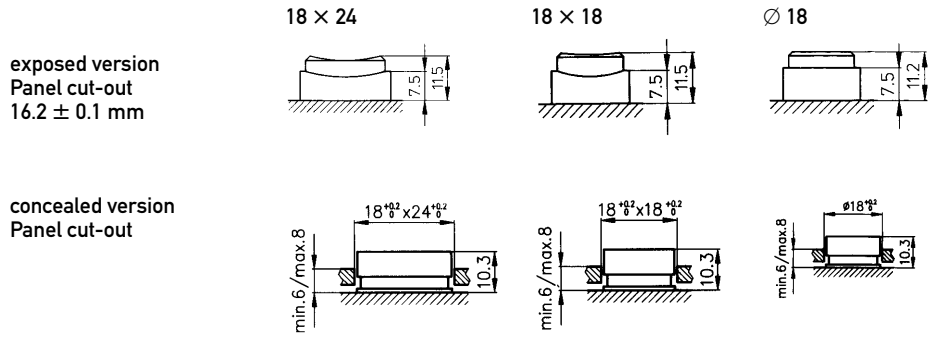


Recommended maximum electrical ratings

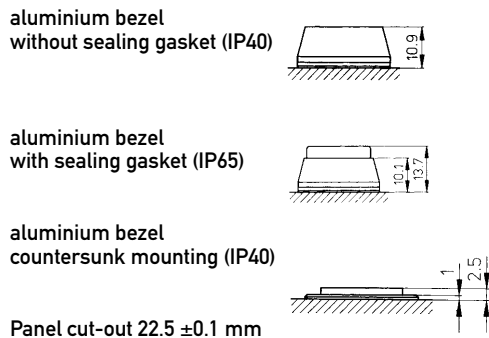
Voltage (max)	Resistive load (A)	Inductive load (A)	Approval
250 VAC	5.0 (0.7 pf)		UL, CSA, VDE - max. admissible circuit breaker C6A
12 VDC	5.0	3.0	General rating
24 VDC	4.0	2.0	General rating
36 VDC	3.0	1.7	General rating
48 VDC	2.0	1.5	General rating
60 VDC	1.5	1.2	General rating
125 VDC	0.5	0.3	General rating
250 VDC	0.3	0.2	General rating
Electrical life	70,000 cycles at 5A, 250 VAC, 0.7 pf		

TP5

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



Aluminium bezel ∅ 25 and lens heights in mm (switch off position)



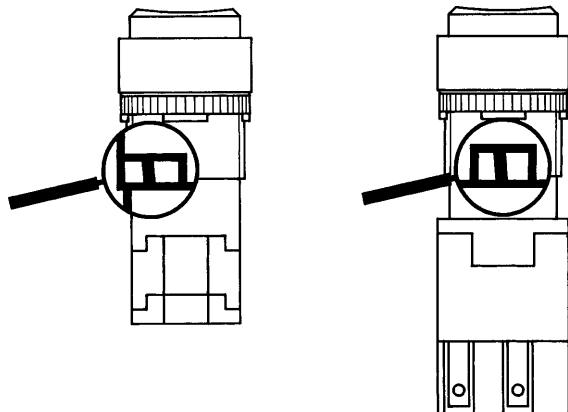
Panel cut-out 22.5 ± 0.1 mm

Front panel thickness	plastic bezel	1.0 mm to 5.5 mm
	aluminium 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.

Type coding key for standard products

Basic type		TP5					Example: TP5 1 MAA0 A0 A N					
Panel cut-out		1 Ø 16.2 mm										
Switch body (A)	MAA0	Momentary	18 × 24 mm	Exposed; IP40; solder	None	1 NO + 1 NC	TH50008000					
	MAA1	Momentary	18 × 24 mm	Exposed; IP40; solder	None	2 NO + 2 NC	TH500208000					
	MAA2	Momentary	18 × 24 mm	Exposed; IP40; solder	None	3 NO + 3 NC	TH500308000					
	MAA3	Momentary	18 × 24 mm	Exposed; IP40; solder	None	None	TH510008000					
	LAA0	Latching	18 × 24 mm	Exposed; IP40; solder	None	1 NO + 1 NC	TH510108000					
	LAA1	Latching	18 × 24 mm	Exposed; IP40; solder	None	2 NO + 2 NC	TH510208000					
	LAA2	Latching	18 × 24 mm	Exposed; IP40; solder	None	3 NO + 3 NC	TH510308000					
	LAA3	Latching	18 × 24 mm	Exposed; IP40; solder	None	None	TH500002000					
	MAB0	Momentary	18 × 24 mm	Concealed; IP40; solder	None	1 NO + 1 NC	TH500102000					
	MAB1	Momentary	18 × 24 mm	Concealed; IP40; solder	None	2 NO + 2 NC	TH500202000					
	MAB2	Momentary	18 × 24 mm	Concealed; IP40; solder	None	3 NO + 3 NC	TH500302000					
	MAB3	Momentary	18 × 24 mm	Concealed; IP40; solder	None	None	TH510002000					
	LAB0	Latching	18 × 24 mm	Concealed; IP40; solder	None	1 NO + 1 NC	TH510102000					
	LAB1	Latching	18 × 24 mm	Concealed; IP40; solder	None	2 NO + 2 NC	TH510202000					
	LAB2	Latching	18 × 24 mm	Concealed; IP40; solder	None	3 NO + 3 NC	TH510302000					
	LAB3	Latching	18 × 24 mm	Concealed; IP40; solder	None	None						
	Switch body (B)	MBA0	Momentary	18 × 18 mm	Exposed; IP40; solder	None	1 NO + 1 NC	TH502008000				
		MBA1	Momentary	18 × 18 mm	Exposed; IP40; solder	None	2 NO + 2 NC	TH502208000				
		MBA2	Momentary	18 × 18 mm	Exposed; IP40; solder	None	3 NO + 3 NC	TH502308000				
		MBA3	Momentary	18 × 18 mm	Exposed; IP40; solder	None	None	TH512008000				
		LBA0	Latching	18 × 18 mm	Exposed; IP40; solder	None	1 NO + 1 NC	TH512108000				
LBA1		Latching	18 × 18 mm	Exposed; IP40; solder	None	2 NO + 2 NC	TH512208000					
LBA2		Latching	18 × 18 mm	Exposed; IP40; solder	None	3 NO + 3 NC	TH512308000					
LBA3		Latching	18 × 18 mm	Exposed; IP40; solder	None	None	TH502002000					
MBB0		Momentary	18 × 18 mm	Concealed; IP40; solder	None	1 NO + 1 NC	TH502102000					
MBB1		Momentary	18 × 18 mm	Concealed; IP40; solder	None	2 NO + 2 NC	TH502202000					
MBB2		Momentary	18 × 18 mm	Concealed; IP40; solder	None	3 NO + 3 NC	TH502302000					
MBB3		Momentary	18 × 18 mm	Concealed; IP40; solder	None	None	TH512002000					
LBB0		Latching	18 × 18 mm	Concealed; IP40; solder	None	1 NO + 1 NC	TH512102000					
LBB1		Latching	18 × 18 mm	Concealed; IP40; solder	None	2 NO + 2 NC	TH512202000					
LBB2		Latching	18 × 18 mm	Concealed; IP40; solder	None	3 NO + 3 NC	TH512302000					
LBB3	Latching	18 × 18 mm	Concealed; IP40; solder	None	None							
Switch body (C)	MDA0	Momentary	Ø 18 mm	Exposed; IP40; solder	None	1 NO + 1 NC	TH504008000					
	MDA1	Momentary	Ø 18 mm	Exposed; IP40; solder	None	2 NO + 2 NC	TH504208000					
	MDA2	Momentary	Ø 18 mm	Exposed; IP40; solder	None	3 NO + 3 NC	TH504308000					
	MDA3	Momentary	Ø 18 mm	Exposed; IP40; solder	None	None	TH514008000					
	LDA0	Latching	Ø 18 mm	Exposed; IP40; solder	None	1 NO + 1 NC	TH514108000					
	LDA1	Latching	Ø 18 mm	Exposed; IP40; solder	None	2 NO + 2 NC	TH514208000					
	LDA2	Latching	Ø 18 mm	Exposed; IP40; solder	None	3 NO + 3 NC	TH514308000					
	LDA3	Latching	Ø 18 mm	Exposed; IP40; solder	None	None	TH504002000					
	MDB0	Momentary	Ø 18 mm	Concealed; IP40; solder	None	1 NO + 1 NC	TH504102000					
	MDB1	Momentary	Ø 18 mm	Concealed; IP40; solder	None	2 NO + 2 NC	TH504202000					
	MDB2	Momentary	Ø 18 mm	Concealed; IP40; solder	None	3 NO + 3 NC	TH504302000					
	MDB3	Momentary	Ø 18 mm	Concealed; IP40; solder	None	None	TH514002000					
	LDB0	Latching	Ø 18 mm	Concealed; IP40; solder	None	1 NO + 1 NC	TH514102000					
	LDB1	Latching	Ø 18 mm	Concealed; IP40; solder	None	2 NO + 2 NC	TH514202000					
	LDB2	Latching	Ø 18 mm	Concealed; IP40; solder	None	3 NO + 3 NC	TH514302000					
	LDB3	Latching	Ø 18 mm	Concealed; IP40; solder	None	None						
	Transparent Lens For Switch body style (A)	A0	White	15 × 21 mm	Exposed	18 × 24 mm	Exposed	TH461021000	Concealed	TH461017000		
		A1	Yellow	15 × 21 mm	Exposed	18 × 24 mm	Exposed	TH461121000	Concealed	TH461117000		
A2		Green	15 × 21 mm	Exposed	18 × 24 mm	Exposed	TH461221000	Concealed	TH461217000			
A3		Blue	15 × 21 mm	Exposed	18 × 24 mm	Exposed	TH461321000	Concealed	TH461317000			
A4		Red	15 × 21 mm	Exposed	18 × 24 mm	Exposed	TH461421000	Concealed	TH461417000			
A6		Orange	15 × 21 mm	Exposed	18 × 24 mm	Exposed	TH461621000	Concealed	TH461617000			
For Switch body style (B)	B0	White	15 × 15 mm	Exposed	18 × 18 mm	Exposed	TH463021000	Concealed	TH463018000			
	B1	Yellow	15 × 15 mm	Exposed	18 × 18 mm	Exposed	TH463121000	Concealed	TH463118000			
	B2	Green	15 × 15 mm	Exposed	18 × 18 mm	Exposed	TH463221000	Concealed	TH463218000			
	B3	Blue	15 × 15 mm	Exposed	18 × 18 mm	Exposed	TH463321000	Concealed	TH463318000			
	B4	Red	15 × 15 mm	Exposed	18 × 18 mm	Exposed	TH463421000	Concealed	TH463418000			
	B6	Orange	15 × 15 mm	Exposed	18 × 18 mm	Exposed	TH463621000	Concealed	TH463618000			
For Switch body style (C)	D0	White	Ø 15 mm	Exposed	Ø 18 mm	Exposed	TH465021000	Concealed	TH465015000			
	D1	Yellow	Ø 15 mm	Exposed	Ø 18 mm	Exposed	TH465121000	Concealed	TH465115000			
	D2	Green	Ø 15 mm	Exposed	Ø 18 mm	Exposed	TH465221000	Concealed	TH465215000			
	D3	Blue	Ø 15 mm	Exposed	Ø 18 mm	Exposed	TH465321000	Concealed	TH465315000			
	D4	Red	Ø 15 mm	Exposed	Ø 18 mm	Exposed	TH465421000	Concealed	TH465415000			
	D6	Orange	Ø 15 mm	Exposed	Ø 18 mm	Exposed	TH465621000	Concealed	TH465615000			
Illumination	X	Non illuminated										
	A	6V										
	B	12V										
	C	24V										
Illumination Colour	X	Non illuminated										
	N	Incandescent lamp	6V, 200 mA TH590000000	12V, 80 mA TH590010000	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	6V AC/DC, 45 mA TH590232000	12V AC/DC, 25 mA TH590235000	24V AC/DC, 12.5 mA TH590238000	48V AC/DC, 12.5 mA TH590241000						
	4	Red LED	6V AC/DC, 45 mA TH590230000	12V AC/DC, 25 mA TH590233000	24V AC/DC, 12.5 mA TH590236000	48V AC/DC, 12.5 mA TH590239000						

Type coding key for standard products

Basic type	TP5					Example: TP5 2 MFC0 F0 A N				
Panel cut-out	2 Ø 22.5 mm									
Switch body	Function	Actuator	Housing (Aluminium)			Contact blocks	Part No.			
	MFC0 Momentary	Ø 25 mm	Exposed Aluminium; IP40 / IP65*; solder			None	TH504018000			
	MFC1 Momentary	Ø 25 mm	Exposed Aluminium; IP40 / IP65*; solder			1 NO + 1 NC	TH504118000			
	MFC2 Momentary	Ø 25 mm	Exposed Aluminium; IP40 / IP65*; solder			2 NO + 2 NC	TH504218000			
	MFC3 Momentary	Ø 25 mm	Exposed Aluminium; IP40 / IP65*; solder			3 NO + 3 NC	TH504318000			
	LFC0 Latching_	Ø 25 mm	Exposed Aluminium; IP40 / IP65*; solder			None	TH514018000			
	LFC1 Latching_	Ø 25 mm	Exposed Aluminium; IP40 / IP65*; solder			1 NO + 1 NC	TH514118000			
	LFC2 Latching_	Ø 25 mm	Exposed Aluminium; IP40 / IP65*; solder			2 NO + 2 NC	TH514218000			
	LFC3 Latching_	Ø 25 mm	Exposed Aluminium; IP40 / IP65*; solder			3 NO + 3 NC	TH514318000			
	MFD0 Momentary	Ø 25 mm	Flush Aluminium; IP40; solder			None	TH504050000			
	MFD1 Momentary	Ø 25 mm	Flush Aluminium; IP40; solder			1 NO + 1 NC	TH504150000			
	MFD2 Momentary	Ø 25 mm	Flush Aluminium; IP40; solder			2 NO + 2 NC	TH504250000			
	MFD3 Momentary	Ø 25 mm	Flush Aluminium; IP40; solder			3 NO + 3 NC	TH504350000			
	LFD0 Latching_	Ø 25 mm	Flush Aluminium; IP40; solder			None	TH514050000			
	LFD1 Latching_	Ø 25 mm	Flush Aluminium; IP40; solder			1 NO + 1 NC	TH514150000			
	LFD2 Latching_	Ø 25 mm	Flush Aluminium; IP40; solder			2 NO + 2 NC	TH514250000			
	LFD3 Latching_	Ø 25 mm	Flush Aluminium; IP40; solder			3 NO + 3 NC	TH514350000			
	MFK0 Momentary	Ø 25 mm	Exposed Aluminium with silicon cap; IP65*; solder			None	TH504033000			
	MFK1 Momentary	Ø 25 mm	Exposed Aluminium with silicon cap; IP65*; solder			1 NO + 1 NC	TH504133000			
	MFK2 Momentary	Ø 25 mm	Exposed Aluminium with silicon cap; IP65*; solder			2 NO + 2 NC	TH504233000			
	MFK3 Momentary	Ø 25 mm	Exposed Aluminium with silicon cap; IP65*; solder			3 NO + 3 NC	TH504333000			
	LFK0 Latching_	Ø 25 mm	Exposed Aluminium with silicon cap; IP65*; solder			None	TH514033000			
	LFK1 Latching_	Ø 25 mm	Exposed Aluminium with silicon cap; IP65*; solder			1 NO + 1 NC	TH514133000			
	LFK2 Latching_	Ø 25 mm	Exposed Aluminium with silicon cap; IP65*; solder			2 NO + 2 NC	TH514233000			
LFK3 Latching_	Ø 25 mm	Exposed Aluminium 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								
	F	48V								
Illumination Colour	N	Non illuminated Incandescent lamp	6V, 200 mA TH590000000	12V, 80 mA TH59001000	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				

TP4

Panel Mounted

Push Button

TP4

Panel cut-out (mm) \varnothing 16.2 or \varnothing 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
 \varnothing 24
 \varnothing 30

Actuator ■ mushroom cap in different shapes and colours

Approvals UL, CSA, VDE



Popular products

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

Specifications

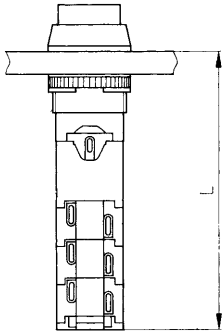
Mechanism	Momentary or latching
Actuating force	Approximately 2.5N – 1 contact block
Mounting	Central fixing with metal lock nut
Protection	IP40, IP65
Bezel material	Thermoplastic or anodized aluminium alloy
Lens material	Polycarbonate – engravable
Illumination	Non-illuminated
Temperature range °C	-30°C 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)	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		

TP4

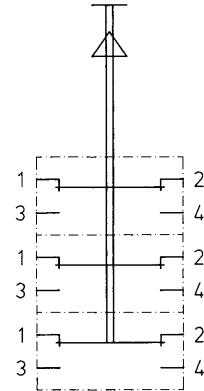
Dimensions



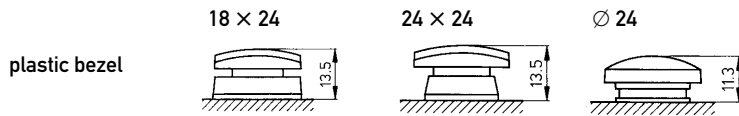
Length in mm

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)



plastic bezel

aluminium bezel

panel cut-out 22.5 mm

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

TP4

Type coding key for standard products

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 colour		A0	White	18 × 24 mm	Mushroom	THXXXXXX WHT					
	A1	Yellow	18 × 24 mm	Mushroom	THXXXXXX YEL						
	For Switch body (A)	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 Colour	N	Natural									
Illumination	X	Non illuminated									
Illumination colour	X	Non illuminated									

TP8

Panel Mounted

Push Button

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 colours

Approvals none



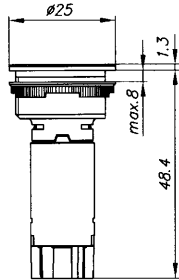
Popular products

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

Specifications

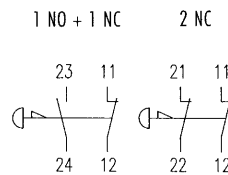
Mechanism	Momentary positive action with wiping contacts
Contact gap	>3 mm
Actuating force	Approximately 6.0N
Mounting	Central fixing with metal lock nut
Protection	IP67
Housing and actuator material	Anodised aluminium or stainless steel (upon request) Non-illuminated
Temperature range °C	-25°C to +55°C
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		

Type coding key for standard products

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 Aluminium natural; faston 2.8 mm × 0.5 mm		TH80750	X			00 X
	MD1A	Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminium yellow; faston 2.8 mm × 0.5 mm		TH80750	X			10 X
	MD2A	Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminium green; faston 2.8 mm × 0.5 mm		TH80750	X			20 X
	MD4A	Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminium red; faston 2.8 mm × 0.5 mm		TH80750	X			40 X
	MD5A	Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminium black; faston 2.8 mm × 0.5 mm		TH80750	X			50 X
	MD8A	Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminium 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 colour (X)	0	Neutral						
	1	Yellow						
	2	Green						
	4	Red	←					
	5	Black						
	8	Dark blue						

Note: Stainless steel versions available upon request.

TP9

Panel Mounted

Push Button

TP9

Panel cut-out (mm) \varnothing 16.2 or \varnothing 22.5

- Characteristics
- momentary short stroke switch
 - sealed IP65 or IP67
 - round metal bezels
 - NO
 - snap-in mounting option \varnothing 22.5 mm (IP65 only)

Rating 50 VAC/VDC, 50 mA

Dimensions (mm) \varnothing 18
 \varnothing 25

Actuator ■ button and housing in different colours

Approvals none



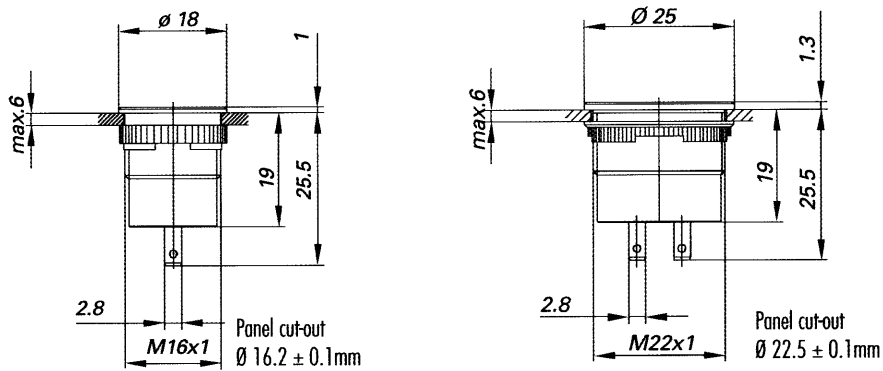
Popular products

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

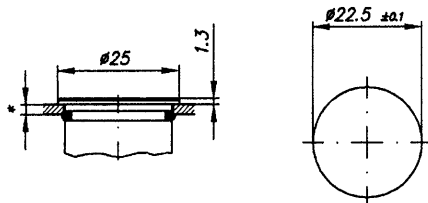
Specifications

Mechanism	Momentary with 1 mm 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 aluminium 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

Dimensions Locknut mounting



Snap-in mounting



Recommended maximum electrical ratings

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

Type coding key for standard products

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 Aluminium natural; faston 2.8mm × 0.5mm		TH921000	XX3
	MD1A	Ø 18 mm Momentary switch IP67; 1NO; Flush Aluminium yellow; faston 2.8mm × 0.5mm		TH921001	XX3
	MD2A	Ø 18 mm Momentary switch IP67; 1NO; Flush Aluminium green; faston 2.8mm × 0.5mm		TH921002	XX3
	MD4A	Ø 18 mm Momentary switch IP67; 1NO; Flush Aluminium red; faston 2.8mm × 0.5mm		TH921004	XX3
	MD5A	Ø 18 mm Momentary switch IP67; 1NO; Flush Aluminium black; faston 2.8mm × 0.5mm		TH921005	XX3
	MD8A	Ø 18 mm Momentary switch IP67; 1NO; Flush Aluminium dark blue; faston 2.8mm × 0.5mm		TH921008	XX3
Actuator Colour (XX)	00	Neutral			
	01	Yellow			
	02	Green			
	04	Red	←		
	05	Black			
	08	Dark blue			

Stainless steel actuator and body styles, available upon request.



Type coding key for standard products

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 Aluminium natural; faston 2.8mm × 0.5mm	TH920	X00	XX1	
	MF1A	Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminium yellow; faston 2.8mm × 0.5mm	TH920	X01	XX1	
	MF2A	Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminium green; faston 2.8mm × 0.5mm	TH920	X02	XX1	
	MF4A	Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminium red; faston 2.8mm × 0.5mm	TH920	X04	XX1	
	MF5A	Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminium black; faston 2.8mm × 0.5mm	TH920	X05	XX1	
	MF8A	Ø 25 mm Momentary switch IP67; 1NO; Flush Aluminium 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 colour (XX)	00	Neutral				
	01	Yellow				
	02	Green				
	04	Red				
	05	Black				
	08	Dark blue				

Stainless steel actuator and body styles, available upon request.

TP7

Panel Mounted

Push Button

TP7

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

Characteristics

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

Rating 3 to 35 VAC/VDC, 200 mA

Dimensions (mm)

- \varnothing 18
- \varnothing 25
- \varnothing 36
- \varnothing 48

Actuator ■ housing in different colours

Approvals none



Popular products

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

Specifications

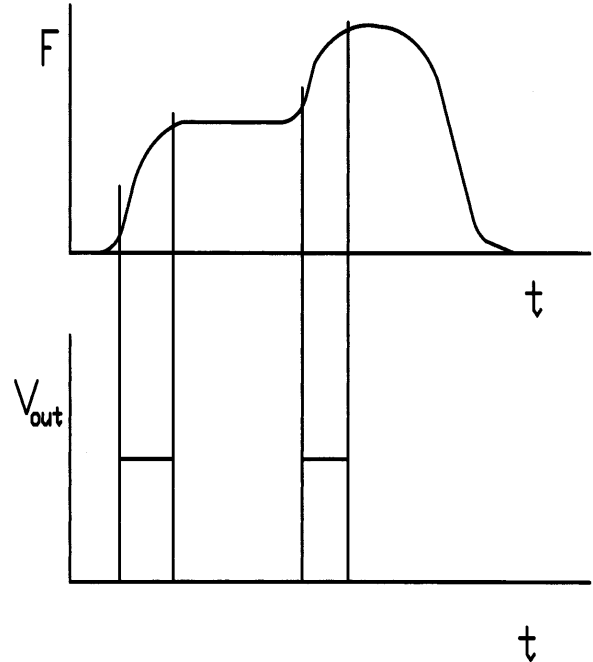
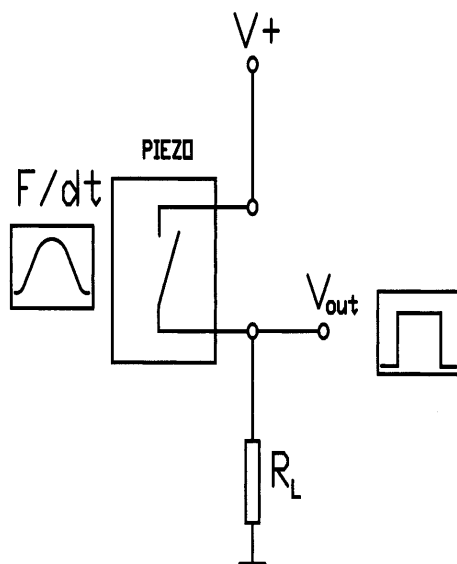
Mechanism	Piezo electronic, without auxilliary energy		
Actuating force	5N maximum at an actuating speed 500 to 1500 mm/s		
Closing impulse duration	10 to 1000 m/s - dependent on force and speed of actuation		
Mounting	Central fixing from the rear with metal lock nut		
Protection	IP68 (after installation)		
Housing and actuator material	Anodised aluminium 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.

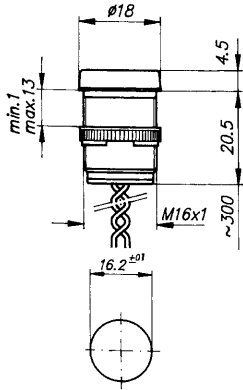
The circuit state diagram shows the approximate relationship between the force/time curve to the voltage circuit state:



Recommended maximum electrical ratings

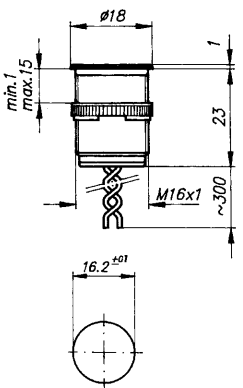
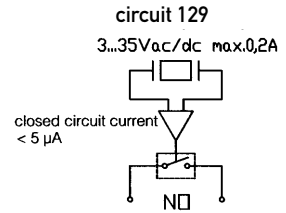
Voltage (max)	Resistive load (A)
3 to 35 VUC	0.2 A (0.7 pf)

Dimensions Non-illuminated

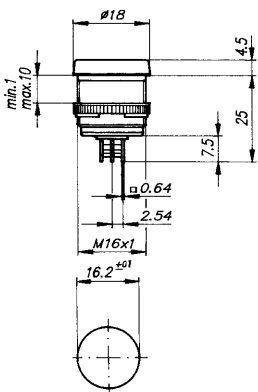
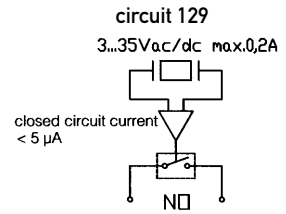


Ø 18, raised housing, prewired

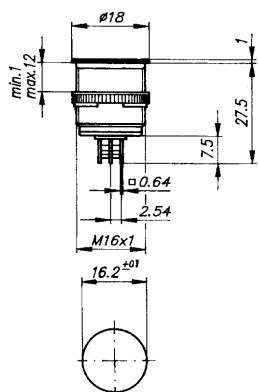
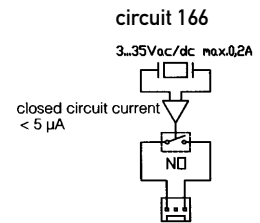
Circuit diagram



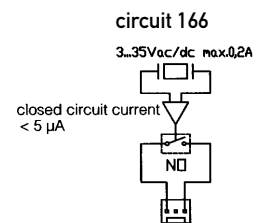
Ø 18, flush housing, prewired



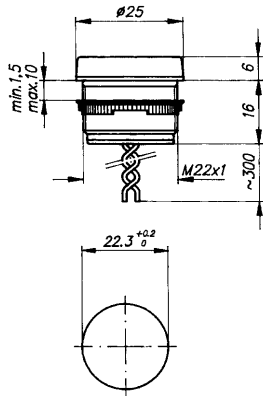
Ø 18, raised housing, Molex-style 3 pin



Ø 18, flush housing, Molex-style 3 pin

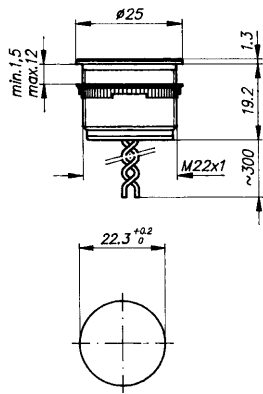
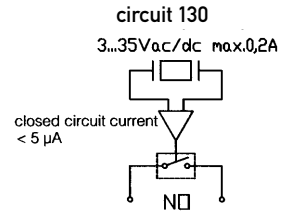


Dimensions Non-illuminated

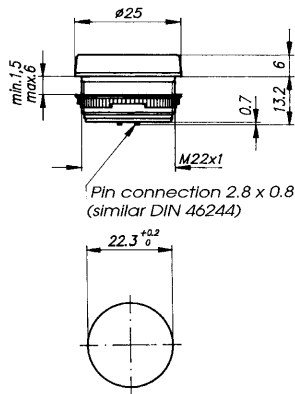
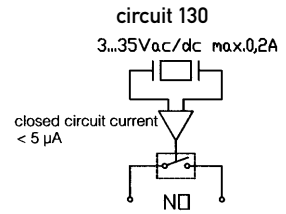


Ø 25, raised housing, prewired

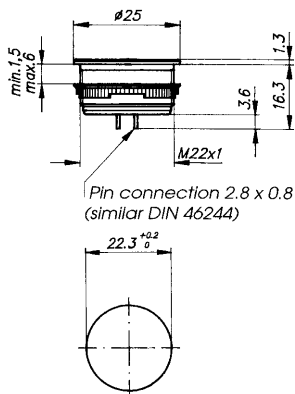
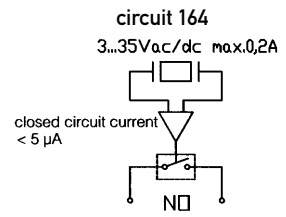
Circuit diagram



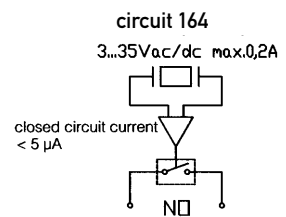
Ø 25, flush housing, prewired



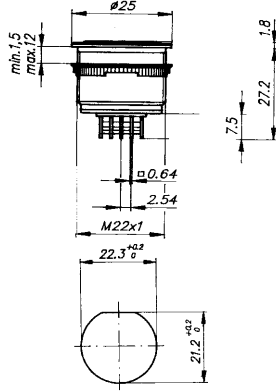
Ø 25, raised housing, solder connections 2.8 × 0.8



Ø 25, raised housing, solder connections 2.8 × 0.8

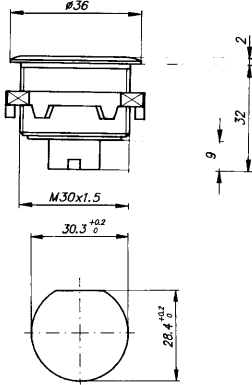
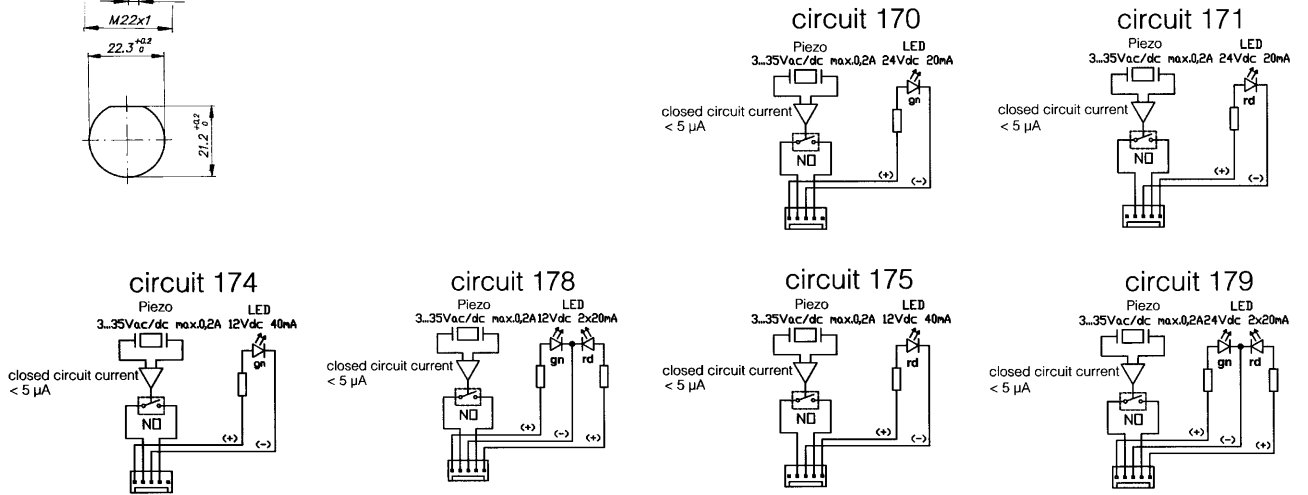


Dimensions Illuminated



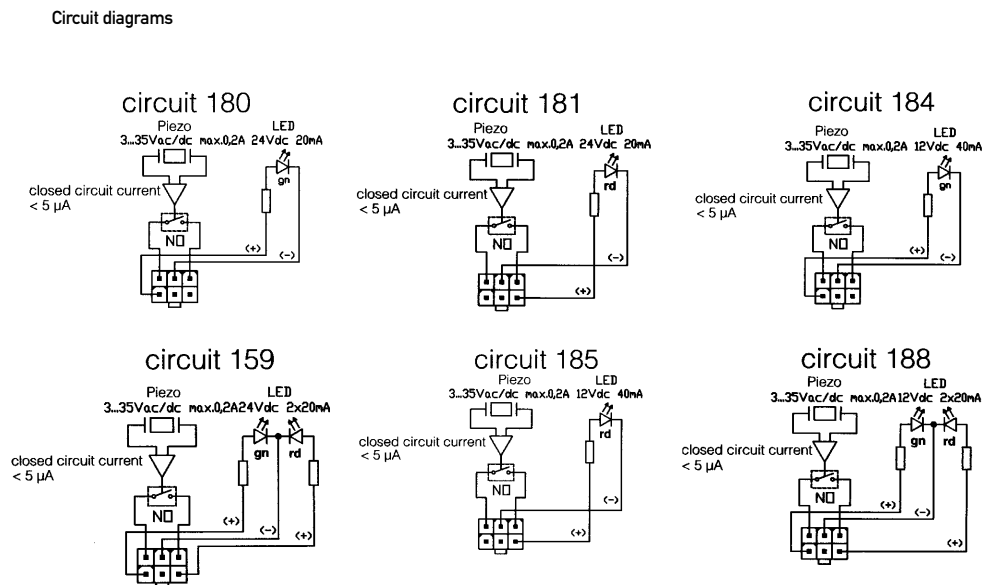
Ø 25. flush housing, Molex-style 5 pin

Circuit diagram

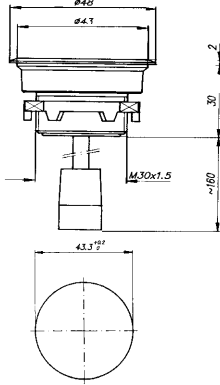


Ø 36. flush housing, Molex-style 6 pin

Circuit diagram



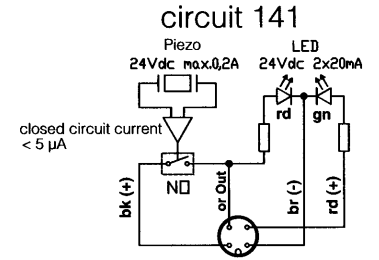
Dimensions Illuminated



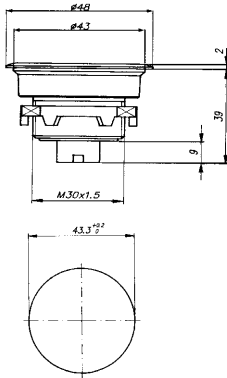
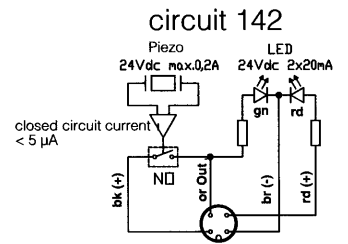
Ø 48, flush housing, wired with round connector
AMP-style 4 pin

Internally wired visual indicator, red

Circuit diagram

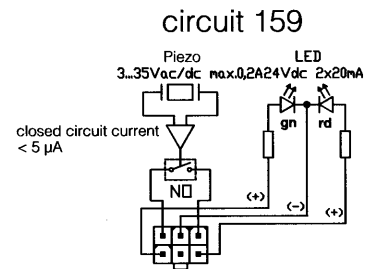
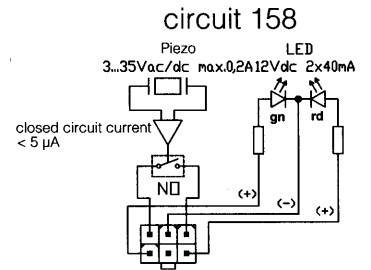


Internally wired visual indicator, green



Ø 48, flush housing, Molex-style 6 pin

Circuit diagram



Type coding key for standard products

Basic type		TP7						Example: TP7 1 MDIA 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. colour (XX)					
Switch body	MD1A	Momentary 1NO: 35V / 0.2A	Ø 18 mm	Raised Aluminium	Prewired	IP68	TH7020XX129					
	MD2A	Momentary 1NO: 35V / 0.2A	Ø 18 mm	Raised Aluminium	3 Pin MOLEX	IP68	TH7025XX166					
	MD1B	Momentary 1NO: 35V / 0.2A	Ø 18 mm	Flush Aluminium	Prewired	IP68	TH7021XX129					
	MD2B	Momentary 1NO: 35V / 0.2A	Ø 18 mm	Flush Aluminium	3 Pin MOLEX	IP68	TH7026XX166					
Non-illuminated	MF1A	Momentary 1NO: 35V / 0.2A	Ø 25 mm	Raised Aluminium	Prewired	IP68	TH7030XX130					
	MF2A	Momentary 1NC: 35V / 0.2A	Ø 25 mm	Raised Aluminium	Prewired	IP68	TH7030XX131					
	MF4A	Momentary 1NO: 35V / 0.2A	Ø 25 mm	Raised Aluminium	2.8 × 0.8 mm	IP68	TH7035XX164					
	MF1B	Momentary 1NO: 35V / 0.2A	Ø 25 mm	Flush Aluminium	Prewired	IP68	TH7031XX130					
	MF2B	Momentary 1NC: 35V / 0.2A	Ø 25 mm	Flush Aluminium	Prewired	IP68	TH7031XX131					
	MF4B	Momentary 1NO: 35V / 0.2A	Ø 25 mm	Flush Aluminium	2.8 × 0.8 mm	IP68	TH7036XX164					
	Illuminated	MG1B	Momentary 1NO: 35V / 0.2A 12V/40mA LED red	Ø 25 mm	Flush Aluminium	5 pin MOLEX	IP68	TH7055XX175				
		MG2B	Momentary 1NO: 35V / 0.2A 24V/20mA LED red	Ø 25 mm	Flush Aluminium	5 pin MOLEX	IP68	TH7055XX171				
MG3B		Momentary 1NO: 35V / 0.2A 12V/40mA LED green	Ø 25 mm	Flush Aluminium	5 pin MOLEX	IP68	TH7055XX174					
MG4B		Momentary 1NO: 35V / 0.2A 24V/20mA LED green	Ø 25 mm	Flush Aluminium	5 pin MOLEX	IP68	TH7055XX170					
MG5B		Momentary 1NO: 35V / 0.2A 12V/40mA LED red/green	Ø 25 mm	Flush Aluminium	5 pin MOLEX	IP68	TH7055XX178					
MG6B		Momentary 1NO: 35V / 0.2A 24V/20mA LED red/green	Ø 25 mm	Flush Aluminium	5 pin MOLEX	IP68	TH7055XX179					
Actuator colour (XX)	00	Natural	} Please select appropriate colour 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 colour	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.

Type coding key for standard products

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. colour (XX)					
Switch body Illuminated	MH1B	Momentary 1NO; 35V / 0.2 A 12V/40mA LED red	Ø 36 mm	Flush Aluminium	6 pin MOLEX	IP68	TH7065XX185					
	MH2B	Momentary 1NO; 35V / 0.2 A 24V/20mA LED red	Ø 36 mm	Flush Aluminium	6 pin MOLEX	IP68	TH7065XX181					
	MH3B	Momentary 1NO; 35V / 0.2 A 12V/40mA LED green	Ø 36 mm	Flush Aluminium	6 pin MOLEX	IP68	TH7065XX184					
	MH4B	Momentary 1NO; 35V / 0.2 A 24V/20mA LED green	Ø 36 mm	Flush Aluminium	6 pin MOLEX	IP68	TH7065XX180					
	MH5B	Momentary 1NO; 35V / 0.2 A 12V/2×20mA LED red/green	Ø 36 mm	Flush Aluminium	6 pin MOLEX	IP68	TH7065XX188					
	MH6B	Momentary 1NO; 35V / 0.2 A 24V/2×20mA LED red/green	Ø 36 mm	Flush Aluminium	6 pin MOLEX	IP68	TH7065XX159					
Illuminated	MJ1B	Momentary 1NO; 35V, 0.2 A 24V, 2×20 mA LED green/red	Ø 48 mm	Flush Aluminium	6 pin MOLEX	IP68	TH7062XX159					
	MJ2B	Momentary 1NO; 35V, 0.2 A 12V, 2×40 mA LED green/red	Ø 48 mm	Flush Aluminium	6 pin MOLEX	IP68	TH7062XX158					
	MJ3B	Momentary 1NO; 24V, 0.2 A 24V, 2×20 mA LED red/green	Ø 48 mm	Flush Aluminium	4 pin AMP	IP68	TH7062XX141					
	MJ4B	Momentary 1NO; 24V, 0.2 A 24V, 2×20 mA LED green/red	Ø 48 mm	Flush Aluminium	4 pin AMP	IP68	TH7062XX142					
Actuator colour (XX)	00	Natural	}	Please select appropriate colour 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 colour	2	Green LED										
	4	Red LED										
	9	Red/Green LED										

Stainless steel versions, available upon request.

3300

Panel Mounted

Push Button

3300

- Characteristics
- momentary function
 - short travel 0.4 mm ca.
 - sealed IP67
 - vandal resistant
 - with or without illumination, two colours

Rating 12–24 VDC / 30 mA

Dimensions (mm) Ø 82

- Actuator
- anodised surface
 - plated surface
 - powder coated surface

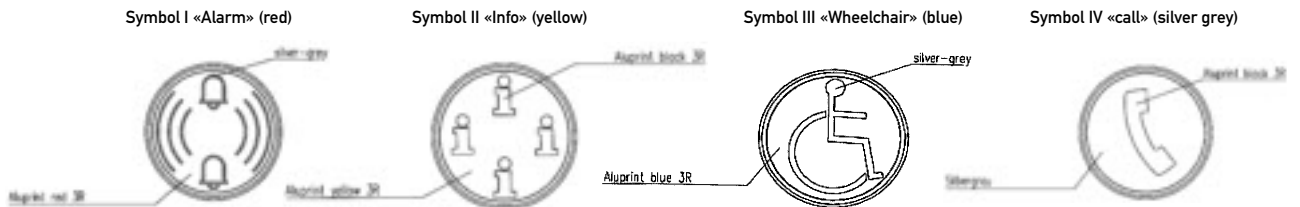
Approvals on request



Popular products

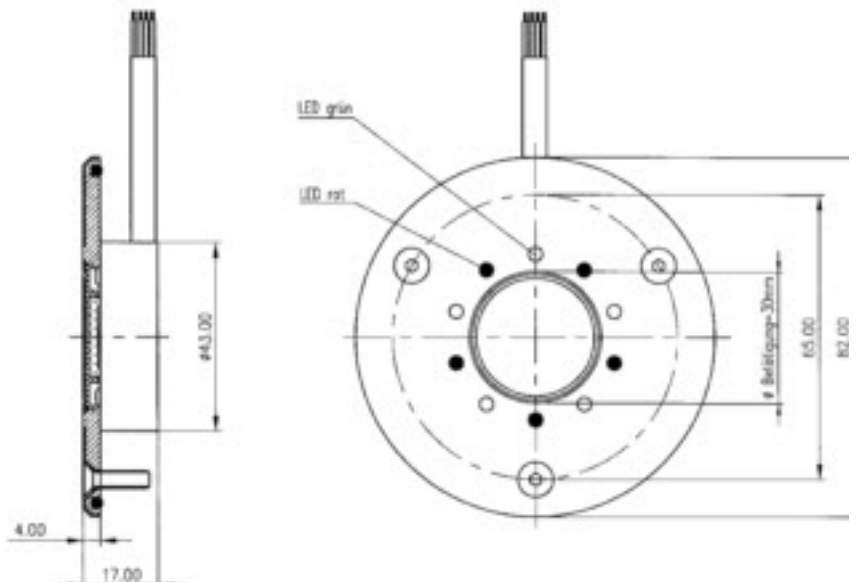
Ordering Reference	Function	Terminals	Symbol / Panel
3300-001	momentary	prewired	Alarm/red
3300-002	momentary	prewired	Info/yellow
3300-003	momentary	prewired	Wheelchair/blue
3300-004	momentary	prewired	Phone/silver grey

Existent legends



other Symbol on request
3300

Dimensions



TI2

Panel Mounted

Indicators

TI2

Panel cut-out (mm) \varnothing 16.2 or \varnothing 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
 $\varnothing 18$
 $\varnothing 25$

Actuator ■ lenses in different shapes and colours

Approvals UL, CSA, VDE



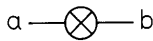
Popular products

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

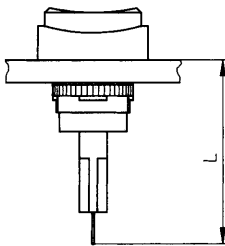
Specifications

Mounting	Central fixing with metal lock nut
Protection	IP40, IP65, IP67
Bezel material	Thermoplastic or anodized aluminium 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
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



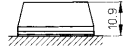
Length in mm	
plastic bezels	38 mm
countersunk mounting bezels	40 mm
aluminium bezels	48 mm
countersunk mounting	

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

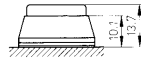
	18 × 24	18 × 18	Ø 18
exposed version IP40			
exposed version IP67			
panel cut-out 16.2 ± 0.1 mm			
concealed version IP40			

Dimensions Aluminium bezel $\varnothing 25$, Lens heights in mm (switch off position)

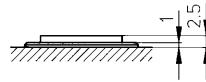
aluminium bezel
without sealing gasket (IP40)



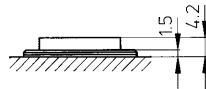
aluminium bezel
with sealing gasket (IP65)



aluminium bezel
countersunk mounting (IP40)



aluminium 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
	aluminium bezel	1.0 to 5.0 mm
	countersunk mounting	2.0 to 15.0 mm



Type coding key for standard products

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					
	VAB	Visual	18 × 24 mm	Concealed; IP40; faston	TH551002000					
	VAM	Visual	18 × 24 mm	Concealed; IP40; solder	TH551102000					
	VAD	Visual	18 × 24 mm	Exposed; IP67; faston	TH551015000					
	VAO	Visual	18 × 24 mm	Exposed; IP67; solder	TH551115000					
	VBA	Visual	18 × 18 mm	Exposed; IP40; faston	TH553008000					
	VBL	Visual	18 × 18 mm	Exposed; IP40; solder	TH553108000					
	VBB	Visual	18 × 18 mm	Concealed; IP40; faston	TH553002000					
	VBM	Visual	18 × 18 mm	Concealed; IP40; solder	TH553102000					
	VBC	Visual	18 × 18 mm	Exposed; IP67; faston	TH553015000					
	VBN	Visual	18 × 18 mm	Exposed; IP67; solder	TH553115000					
	VCA	Visual	Ø 18	Exposed; IP40; faston	TH555008000					
	VCL	Visual	Ø 18	Exposed; IP40; solder	TH555108000					
	VCB	Visual	Ø 18	Concealed; IP40; faston	TH555002000					
	VCM	Visual	Ø 18	Concealed; IP40; solder	TH555102000					
	VCC	Visual	Ø 18	Exposed; IP67; faston	TH555015000					
	VCN	Visual	Ø 18	Exposed; IP67; solder	TH555115000					
	Lens transparent				For body style	For body style	For body style			
				VAA/VAL (IP40)	VAB/VAM (IP40)	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	For body style	For body style				
				VBA/VBL (IP40)	VBB/VBM (IP40)	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	For body style	For body style				
				VCA/VCL (IP40)	VCB/VCM (IP40)	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 colour	N	Incandescent lamp	6V, 200 mA	12V, 80 mA	24V, 50 mA	48V, 25 mA				
			TH590000000	TH590001000	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					

Acoustic versions available upon request

Type coding key for standard products

Basic type	T12				Example: T12	2	VFA	F0	A	N	
Panel cut-out	2				Ø 22.5 mm						
Switch body		Function	Actuator style	Housing	Part No.						
	VFA	Visual	Ø 25	Exposed plastic; IP65; faston	TH555020000						
	VFB	Visual	Ø 25	Exposed plastic; IP65; solder	TH555120000						
	VFC	Visual	Ø 25	Exposed aluminium; IP40/IP65*; faston	TH555018000						
	VFD	Visual	Ø 25	Exposed aluminium; IP40/IP65*; solder	TH555118000						
	VFE	Visual	Ø 25	Exposed aluminium; IP65 with silicon cap; faston	TH555033000						
	VFF	Visual	Ø 25	Exposed aluminium; IP65 with silicon cap; solder	TH555133000						
	VFG	Visual	Ø 25	Flush-aluminium; IP40; faston	TH555050000						
	VFH	Visual	Ø 25	Flush-aluminium; IP40; solder	TH555150000						
	VFJ	Visual	Ø 25	Flush-aluminium; IP67; faston	TH555051000						
VFK	Visual	Ø 25	Flush-aluminium; 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 colour	N	Incandescent lamp		6V, 200 mA	12V, 80 mA	24V, 50 mA	48V, 25 mA				
				TH590000000	TH590001000	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					

Acoustic versions available upon request

TI5

Panel Mounted

Indicators

TI5

Panel cut-out (mm)	Ø 16.2 or Ø 22.5
Characteristics	<ul style="list-style-type: none">■ 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 colours
Approvals	UL, CSA, VDE



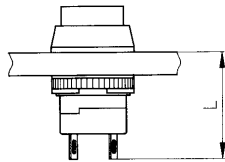
Popular products

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

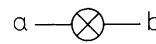
Mounting	Central fixing with metal lock nut
Protection	IP40, IP65
Bezel material	Thermoplastic or anodized aluminium alloy
Lens material	Polycarbonate – engravable
Illumination	T1 ¾ midget grooved lamps – incandescent lamps, LEDs, multi LEDs 60 V, 1.2 W maximum Lamp contact a = anode (+), b = cathode (-) 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

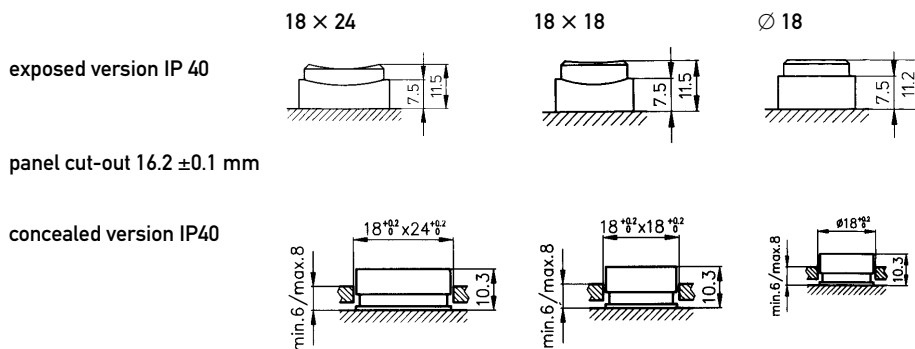


Length in mm	
plastic bezels	23.5
countersunk mounting bezels	22.5
aluminium bezels	32.0
countersunk mounting	

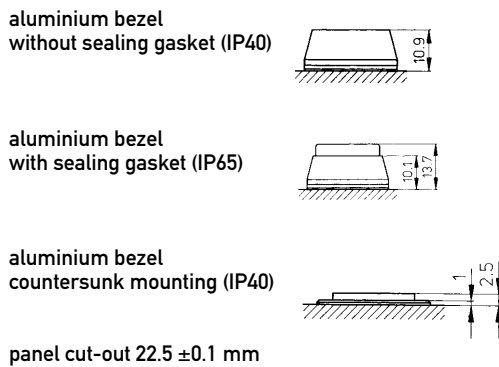
Circuit diagram



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



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



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

Type coding key for standard products

Basic type	T15					Example: T15					
Panel cut-out	1	Ø 16.2 mm					1	VAL	A0	A	N
Switch body (A)	Function	Actuator style	Housing (plastic)		Part No.						
	VAL	Visual	18 × 24 mm	Exposed; IP40; solder		TH550008000					
	VAM	Visual	18 × 24 mm	Concealed; IP40; solder		TH550037000					
	(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)			Exposed	Concealed	Exposed	Concealed					
	A0	White	15 × 21 mm	18 × 24 mm	TH461021000	TH461017000					
	A1	Yellow	15 × 21 mm	18 × 24 mm	TH461121000	TH461117000					
	A2	Green	15 × 21 mm	18 × 24 mm	TH461221000	TH461217000					
	A3	Blue	15 × 21 mm	18 × 24 mm	TH461321000	TH461317000					
	A4	Red	15 × 21 mm	18 × 24 mm	TH461421000	TH461417000					
	A6	Orange	15 × 21 mm	18 × 24 mm	TH461621000	TH461617000					
For Switch body style (B)	B0	White	15 × 15 mm	18 × 18 mm	TH463021000	TH463018000					
	B1	Yellow	15 × 15 mm	18 × 18 mm	TH463121000	TH463118000					
	B2	Green	15 × 15 mm	18 × 18 mm	TH463221000	TH463218000					
	B3	Blue	15 × 15 mm	18 × 18 mm	TH463321000	TH463318000					
	B4	Red	15 × 15 mm	18 × 18 mm	TH463421000	TH463418000					
	B6	Orange	15 × 15 mm	18 × 18 mm	TH463621000	TH463618000					
For Switch body style (C)	D0	White	Ø 15 mm	Ø 18 mm	TH465021000	TH465015000					
	D1	Yellow	Ø 15 mm	Ø 18 mm	TH465121000	TH465115000					
	D2	Green	Ø 15 mm	Ø 18 mm	TH465221000	TH465215000					
	D3	Blue	Ø 15 mm	Ø 18 mm	TH465321000	TH465315000					
	D4	Red	Ø 15 mm	Ø 18 mm	TH465421000	TH465415000					
	D6	Orange	Ø 15 mm	Ø 18 mm	TH465621000	TH465615000					
Illumination	X	Non illuminated									
	A	6V									
	B	12V									
	C	24V									
	F	48V									
Illumination colour	X	Non illuminated									
	N	Incandescent lamp	6V, 200 mA	12V, 80 mA	24V, 50 mA	48V, 25 mA					
			TH590000000	TH590001000	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						

Acoustic versions available upon request

Type coding key for standard products

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 aluminium; IP40; solder	Housing (Aluminium)	Part No. TH554018000						
	VFQ Visual	Ø 25 mm	Exposed aluminium; IP65; solder		TH554018000						
	VFR Visual	Ø 25 mm	Exposed aluminium; IP65* with silicon cap; solder		TH554033000						
	VFS Visual	Ø 25 mm	Flush-aluminium; IP40; solder		TH554050000						
Lens transparent Only for Visual Indicators	F0 White	Ø 18			Exposed IP40/IP65 Flush IP40 TH465015000	Exposed IP65 with sealing ring TH465001000					
	F1 Yellow	Ø 18			TH465115000	TH465101000					
	F2 Green	Ø 18			TH465215000	TH465201000					
	F3 Blue	Ø 18			TH465315000	TH465301000					
	F4 Red	Ø 18			TH465415000	TH465401000					
	F6 Orange	Ø 18			TH465615000	TH465601000					
Illumination	X	Non illuminated									
	A	6V									
	B	12V									
	C	24V									
	F	48V									
Illumination colour	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	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

T19

Panel Mounted

Indicators

T19

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 ■ aluminium housing in different colours

Approvals none



Popular products

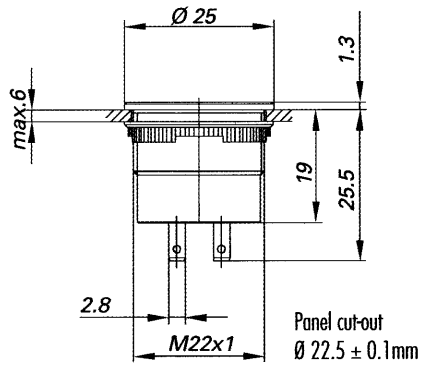
Ordering Reference	Panel cut-out (mm)	Function	Actuator style (mm)	Environmental Protection
T192VFOA500	Ø 22.5	Visual	Ø 25	IP67



Specifications

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

Dimensions



Type coding key for standard products

Basic type	T19			Example: T19	2	VF0A	504
Panel cut-out	2	Ø 22.5 mm					
Switch body	VF0A	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminium natural; faston 2.8 mm × 0.5 mm				TH920000	XXX
	VF1A	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminium yellow; faston 2.8 mm × 0.5 mm				TH920001	XXX
	VF2A	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminium green; faston 2.8 mm × 0.5 mm				TH920002	XXX
	VF4A	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminium red; faston 2.8 mm × 0.5 mm				TH920004	XXX
	VF5A	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminium black; faston 2.8 mm × 0.5 mm				TH920005	XXX
	VF8A	Ø 25 mm Visual Indicator IP67; 1NO; Flush Aluminium 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.

TE8

Panel Mounted

Emergency Stop

TE8

Panel cut-out (mm) \varnothing 16.2 or \varnothing 22.5

- Characteristics
- meets EN418 directives (\varnothing 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) \varnothing 27
 \varnothing 40

- Actuator
- red mushroom cap (\varnothing 27 mm)
 - reset by KABA key (\varnothing 40 mm)

Approvals IEC 947-5-1/947-5-5 (\varnothing 27 mm only)



Popular products

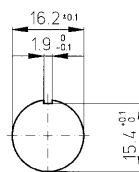
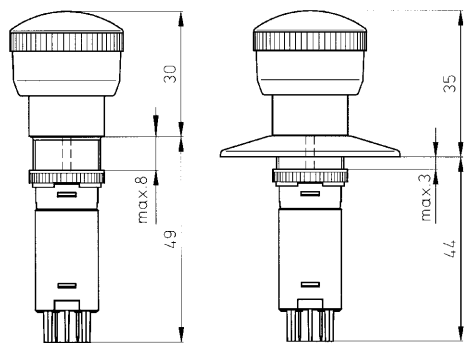
Ordering Reference	Panel cut-out (mm)	Function	Actuator style (mm)	Environmental protection	Terminals (mm)	Electrical rating
TE82KJB1XX	\varnothing 22.5	Key release 1NO + 1NC	\varnothing 40	IP40	2.8 × 0.5 faston	250 VAC, 6A
TE81RGP2A1	\varnothing 16.2	Rotary release 2NC	\varnothing 27	IP67	2.8 × 0.5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

Specifications

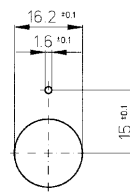
Mechanism	Momentary positive action with wiping contacts
Contact gap	>3 mm
Actuating force	Approximately 25 N
Mounting	Central fixing with metal lock nut (E switch) and Anti-rotation device on key (reset switch)
Protection	IP67
Bezel material	Thermoplastic or nickel-plated brass
Lens material	Polycarbonate
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

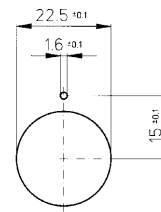
Circuit diagram



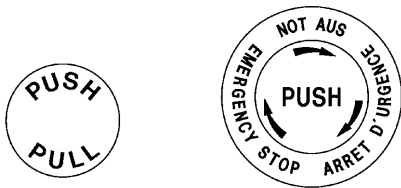
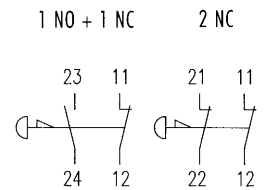
for back-ground decal
for panel cut-out
Ø 16.2 mm



for back-ground disc
for panel cut-out
Ø 16.2 mm



for adapter set
for panel cut-out
Ø 16.2 mm



mushroom cap × 27 mm, red
disc bezel, yellow plastic, × 43 mm

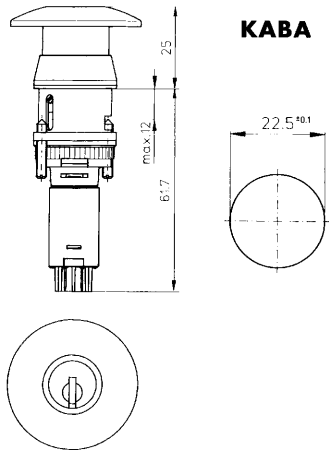
Recommended maximum electrical ratings

Voltage (max) 230 VAC	Resistive load (A) 6.0	Inductive load (A)	Approval IEC 947-5-1, AC15 - recommended circuit breaker C6A
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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
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TE8

Dimensions Mushroom 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 systems 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

Type coding key for standard products

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				

TK2

Panel Mounted

Keypad

TK2

Panel cut-out (mm) \varnothing 16.2 or \varnothing 22.5

- Characteristics
- 2 or 3 position
 - sealed IP40 or IP65
 - plastic or aluminium 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
 $\varnothing 18$
 $\varnothing 25$

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	\varnothing 16.2	2 Position Kaba Micro key	18×24	IP40	2.8×0.5 faston	250 VAC, 5A
TK22B2E001C1C1E	\varnothing 22.5	2 Position Kaba Micro key	\varnothing 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 aluminium 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)

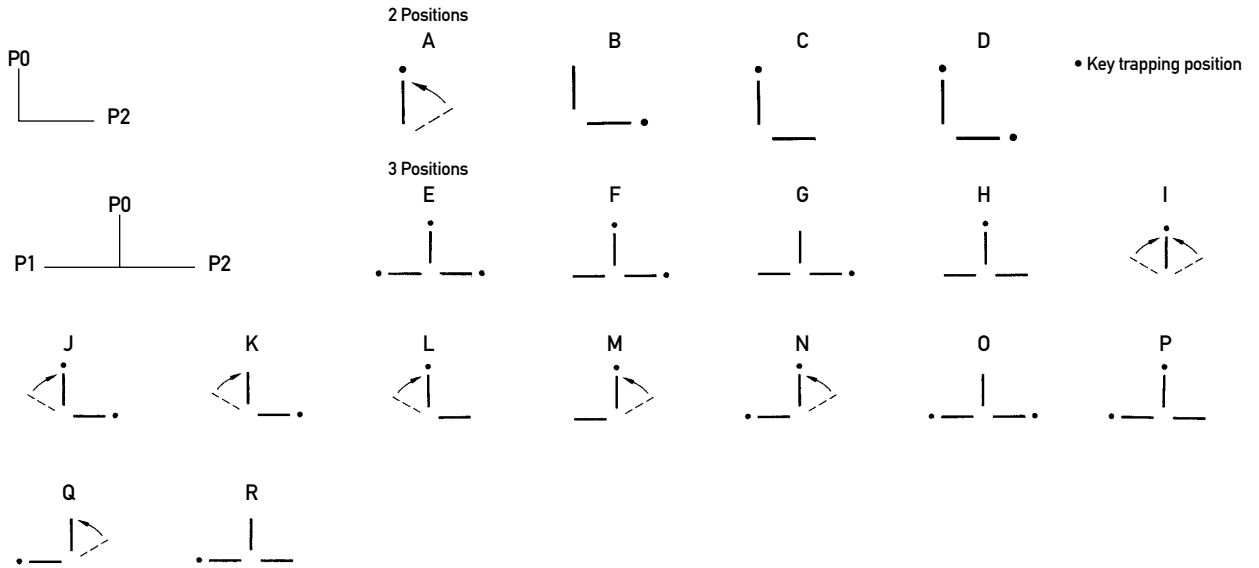
Destruction of the key or lock must be expected if the level 50 Ncm is exceeded.

Recommended maximum electrical ratings

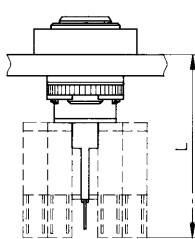
Voltage (max)	Resistive load (A)	Inductive load (A)	Approval
250 VAC	5.0 (0.7 pf)		UL, CSA, VDE - max. admissible circuit breaker C6A
12 VDC	5.0	3.0	General rating
24 VDC	4.0	2.0	General rating
36 VDC	3.0	1.7	General rating
48 VDC	2.0	1.5	General rating
60 VDC	1.5	1.2	General rating
125 VDC	0.5	0.3	General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

TK2

Key positions/
function

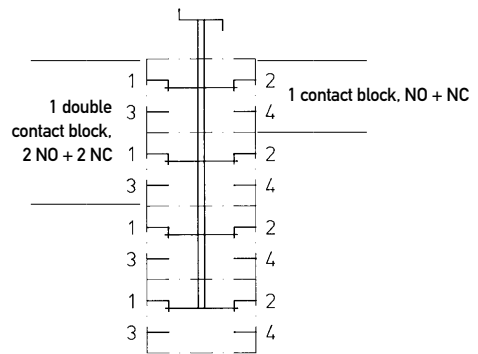


Dimensions



Length in mm (with contact block)
 plastic bezels 43
 aluminium bezels 42

Circuit diagram (2 double contact blocks)

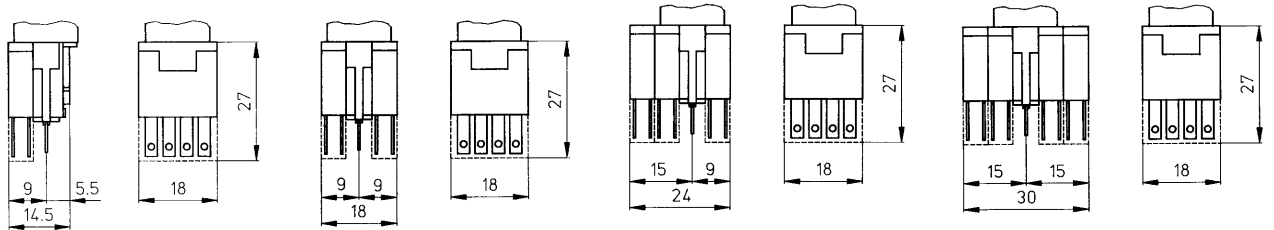


Contact blocks 1 contact block

2 contact blocks

1 contact block +
1 double contact block

2 double contact blocks

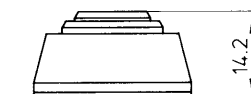
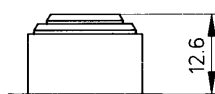
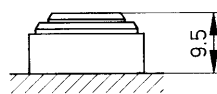


Cylinder height

plastic bezel IP40

plastic bezel IP65
Panel cut-out
16.2 mm ± 0.1 mm

aluminium bezel 2 position key
Panel cut-out
22.5 mm ± 0.1 mm



Panel cut-out 22.5 ± 0.1 mm

Front panel thickness

plastic bezel IP40
plastic bezel IP65
aluminium bezel

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

Type coding key for standard products

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 Aluminium bezel key switches										
Key position / function 16.2 mm cut-out	A2A	2 Positions; IP40; Kaba Micro; Key removable P0					Momentary P2	TH548032XXX				
	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				
	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				
22.5 mm cut-out	A2E	2 Positions; Ø 25 mm Aluminium bezel IP65; Kaba Micro; Key removable P0					Momentary P2	TH544040XXX				
	B2E	2 Positions; Ø 25 mm Aluminium bezel IP65; Kaba Micro; Key removable P2					Latching P2	TH544041XXX				
	C2E	2 Positions; Ø 25 mm Aluminium bezel IP65; Kaba Micro; Key removable P0					Latching P2	TH544042XXX				
	D2E	2 Positions; Ø 25 mm Aluminium 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							
	B	18 mm × 18 mm plastic		IP40	TH493062000							
	D	Ø 18 mm plastic		IP40	TH493064000							
	E	Ø 25 mm aluminium (Factory fitted)		IP65	TH593060000							
					TH593062000							

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

Type coding key for standard products

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 PO + P1 + P2		Latching P1 + P2		TH548050XXX					
	F3A	3 Position; IP40; Kaba Micro; Key removable PO + 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 PO		Latching P1 + P2		TH548053XXX					
	I3A	3 Position; IP40; Kaba Micro; Key removable PO		Momentary P1 + P2		TH548054XXX					
	J3A	3 Position; IP40; Kaba Micro; Key removable PO + 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 PO		Momentary P1 + Latching P2		TH548057XXX					
	M3A	3 Position; IP40; Kaba Micro; Key removable PO		Latching P1 + Momentary P2		TH548058XXX					
	N3A	3 Position; IP40; Kaba Micro; Key removable PO + 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 PO + 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 PO + P1 + P2		Latching P1 + P2		TH548150XXX					
	F3B	3 Position; IP65; Kaba Micro; Key removable PO + 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 PO		Latching P1 + P2		TH548153XXX					
	I3B	3 Position; IP65; Kaba Micro; Key removable PO		Momentary P1 + P2		TH548154XXX					
	J3B	3 Position; IP65; Kaba Micro; Key removable PO + 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 PO		Momentary P1 + Latching P2		TH548157XXX					
	M3B	3 Position; IP65; Kaba Micro; Key removable PO		Latching P1 + Momentary P2		TH548158XXX					
	N3B	3 Position; IP65; Kaba Micro; Key removable PO + 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 PO + 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.

Type coding key for standard products

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			001			
	002	Kaba Micro Code EB0002		THXXXXXX			002			
	003	Kaba Micro Code EB0003		THXXXXXX			003			
	004	Kaba Micro Code EB0004		THXXXXXX			004			
	005	Kaba Micro Code EB0005		THXXXXXX			005			
	006	Kaba Micro Code EB0006		THXXXXXX			006			
	007	Kaba Micro Code EB0007		THXXXXXX			007			
	008	Kaba Micro Code EB0008		THXXXXXX			008			
	009	Kaba Micro Code EB0009		THXXXXXX			009			
	010	Kaba Micro Code EB0010		THXXXXXX			010			
	011	Kaba Micro Code EB0011		THXXXXXX			011			
	012	Kaba Micro Code EB0012		THXXXXXX			012			
	013	Kaba Micro Code EB0013		THXXXXXX			013			
	014	Kaba Micro Code EB0014		THXXXXXX			014			
	015	Kaba Micro Code EB0015		THXXXXXX			015			
	016	Kaba Micro Code EB0016		THXXXXXX			016			
	017	Kaba Micro Code EB0017		THXXXXXX			017			
	018	Kaba Micro Code EB0018		THXXXXXX			018			
	019	Kaba Micro Code EB0019		THXXXXXX			019			
	020	Kaba Micro Code EB0020		THXXXXXX			020			
	999	Mixed differs		THXXXXXX			999			
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	E	Ø 25 mm (Factory fitted)								

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

TR2

Panel Mounted

Rotary

TR2

Panel cut-out (mm) \varnothing 16.2 or \varnothing 22.5

- Characteristics
- 2 and 3 position
 - sealed IP40 or IP65
 - plastic or aluminium 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
 $\varnothing 18$
 $\varnothing 25$

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	\varnothing 16.2	2 Position	18×24	IP40
TR22A2CC1C1E	\varnothing 22.5	2 Position	\varnothing 25	IP65
TR21C2AC1C1A	\varnothing 16.2	3 Position	18×24	IP40
TR22C2CC1C1E	\varnothing 22.5	3 Position	\varnothing 25	IP65

Specifications

Mechanism	Knob actuated
Mounting	Central fixing with metal lock nut
Protection	IP40 or IP65
Bezel material	Thermoplastic or anodized aluminium 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

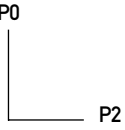
Recommended maximum electrical ratings

Voltage (max) 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		

TR2

Rotary positions/
function

2 Positions



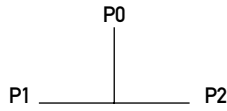
A



B



3 Positions



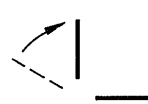
C



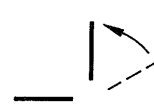
D



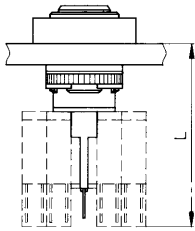
E



F

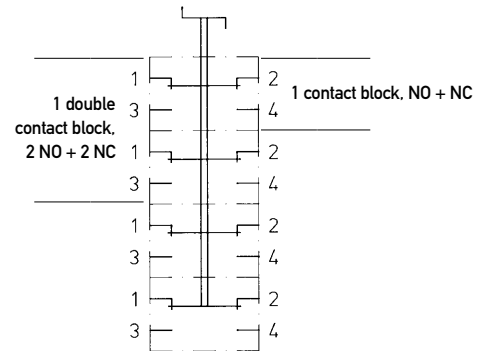


Dimensions



Length in mm (with contact block)
plastic bezels 43
aluminium bezels 42

Circuit diagram (2 double contact blocks)



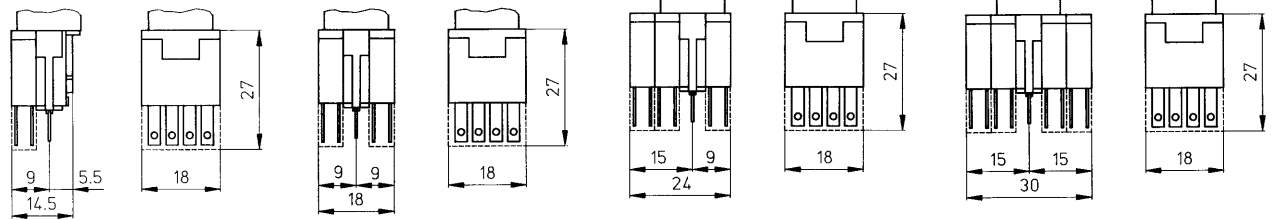
Contact blocks

1 contact block

2 contact blocks

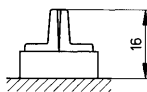
1 contact block +
1 double contact block

2 double contact blocks

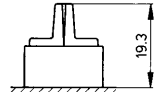


Bezel and rotary knob height

plastic bezel IP40

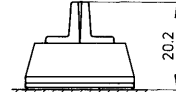


plastic bezel IP65

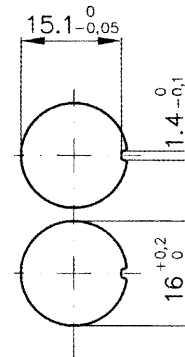


Panel cut-out
16.2 mm ± 0.1 mm
(plastic)

aluminium bezel



Panel cut-out
22.5 mm ± 0.1 mm
(aluminium)



Type coding key for standard products

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 Aluminium bezel rotary switches							
Switch body 16.2 mm panel cut-out	A2A	2 Positions; IP40;	Momentary	TH508021000					
	B2A	2 Positions; IP40;	Latching	TH508020000					
	A2B	2 Positions; IP65;	Momentary	TH508026000					
	B2B	2 Positions; IP65;	Latching	TH508025000					
22.5 mm panel cut-out	A2C	2 Positions; Ø 25 mm Aluminium bezel IP65	Momentary	TH508031000					
	B2C	2 Positions; Ø 25 mm Aluminium bezel IP65	Latching	TH508030000					
Contact block, gold Position 1	XX	No contact block							
	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						
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				IP40	IP65				
	A	18 mm × 24 mm plastic	TH493060000	TH593060000					
	B	18 mm × 18 mm plastic	TH493062000	TH593062000					
	D	Ø 18 mm plastic	TH493064000	TH593064000					
	E	Ø 25 mm aluminium							

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.

Type coding key for standard products

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 Aluminium bezel rotary switches										
Switch body 16.2 mm	C2A	3 Positions; IP40;	Latching P0 + P1 + P2	TH508040000								
	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 Panel cut-out	C2C	3 Positions; Ø 25 mm Aluminium bezel IP65	Latching P0 + P1 + P2	TH508060000								
	D2C	3 Positions; Ø 25 mm Aluminium bezel IP65	Momentary P1 + P2	TH508061000								
	E2C	3 Positions; Ø 25 mm Aluminium bezel IP65	Momentary P1 Latching P0 + P2	TH508062000								
	F2C	3 Positions; Ø 25 mm Aluminium bezel IP65	Momentary P2 Latching P0 + P1	TH508063000								
Contact block, gold Position 1	XX	No contact block										
	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									
		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							
	D	Ø 18 mm plastic		TH493064000	TH593064000							
	E	Ø 25 mm aluminium										

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.

Accessories

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)

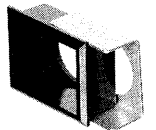
TH593545000	Fixation nuts M16 × 1 (TP2, TP5, TP4)
TH593547000	Fixation nuts M22 × 1 flat (TP2, TP5, TP4)
TH493547000	Fixation nuts M22 × 1 large (TP5, TP4)



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

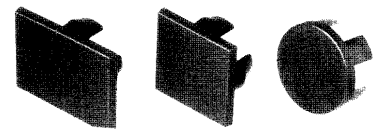
For concealed versions only

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	∅ 18, IP40

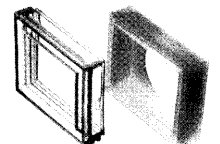


Protecting covers (TP2, TP5, TP4)

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 aluminium (wide sides raised)



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



Accessories

TH493012000 Guard bracket, for switches \varnothing 18, anodised aluminium

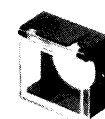


TH493020000 Guard bracket, for switches 18 × 24, black plastic (all sides raised)



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)



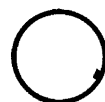
TH493532000 for panel cut-out 22.5 mm (TK2, TR2)



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



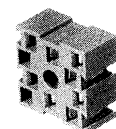
TH060661000 panel cut-out 16.2 mm (TE8)



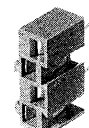
Plug in socket (TP2)

TH593578000 for 1 contact block TP2 with indicator terminals

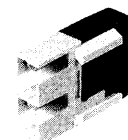
TH593568000 for 2 contact blocks TP2 with indicator terminals



TH593582000 for 1 contact block TP2 without indicator terminals



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



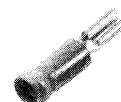
Accessories

Extra and spare keys (TK2)

TH493049001 to TH493049020 (KABA MICRO, EB0001 – EB0020)

Faston Connectors (TP2, TK2, TR2, TP8)

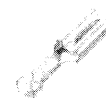
TH593571000 Faston pin, 2.8 × 0.5 mm, insulated, for wires 0.8 – 1.4 mm² (TP2, TK2, TR2)



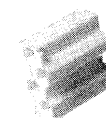
TH593572000 Faston pin, 2.8 × 0.5 mm, for wires 0.5 – 1.0 mm² (TP2, TK2, TR2, TP8)



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)


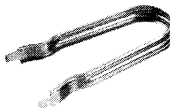
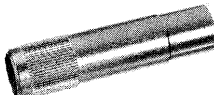



TH593575000 Sleeve and casing for th25 lamp terminals (TP2, TK2, TR2)



Accessories

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	
TH493510000	Insulated terminal cover, for terminal wires	

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

Panel Mounted

Range:	Type	Preferred range	Page
Keyswitches	E1	E1ACAAAE	284
	M1	M1HAAAAE M1HAEAAE M1HAAAAJ	287
	K2	K23FBA201	290
	P2	P23FBA206 P23FBA209 P23FBC209 P23FMA209	293
	P5	P53FBA201	296



E1

Panel Mounted

Keyswitches

E1

Panel cut-out (mm) ∇ 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



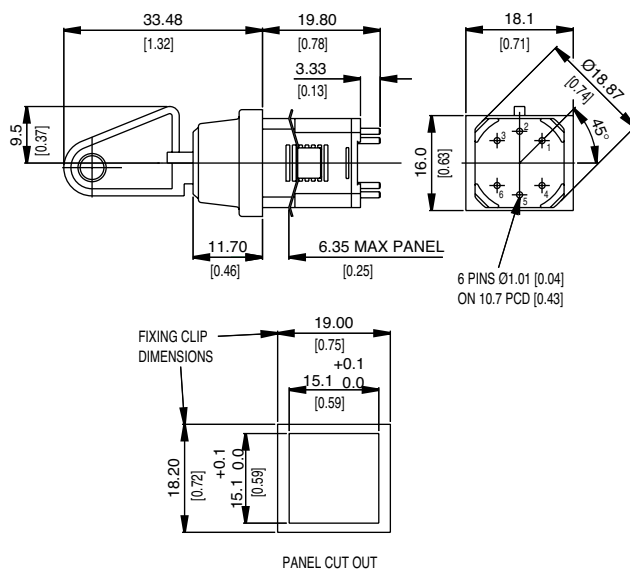
Preferred Range

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	

Type coding key for standard products

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 colour	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

Panel Mounted

Keyswitches

M1

Panel cut-out (mm) ∇ 15.1 × 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



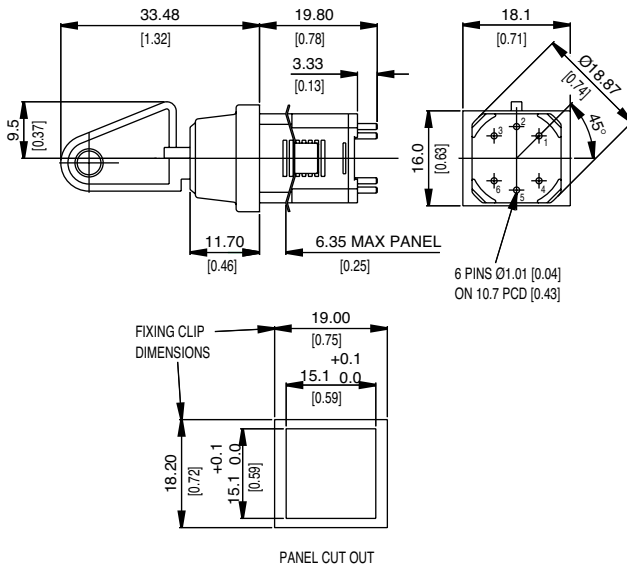
Preferred Range

Ordering Reference	Terminal	Circuit	Actuator	Contacts	Electrical rating
M1HAAA AE	Pins	2 pole CO	Key	Gold-plated	250 VAC, 100 mA
M1HAEE AE	Pins	2 pole CO	Key	Gold-plated	250 VAC, 100 mA
M1HAAA AJ	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

M1

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	
	M1HAEEAE	Key	007	E - 18 × 18	No	
	M1MAAAAE	Key	Production run key coding	A - 18 × 16	No	
M1MAEEAE	Key	Production run key coding	E - 18 × 18	No	No	
Double pole change-over	M1MCAAEE	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	
	M1HAEEAJ	Key	007	E - 18 × 18	No	
	M1MAAAAJ	Key	Production run key coding	A - 18 × 16	No	
	M1MAEEAJ	Key	Production run key coding	E - 18 × 18	No	

Type coding key for standard products

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 colour	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

Panel Mounted

Keyswitches

K2

Panel cut-out (mm)	Ø 19.1
Characteristics	<ul style="list-style-type: none">■ choice of off-on or change-over centre 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



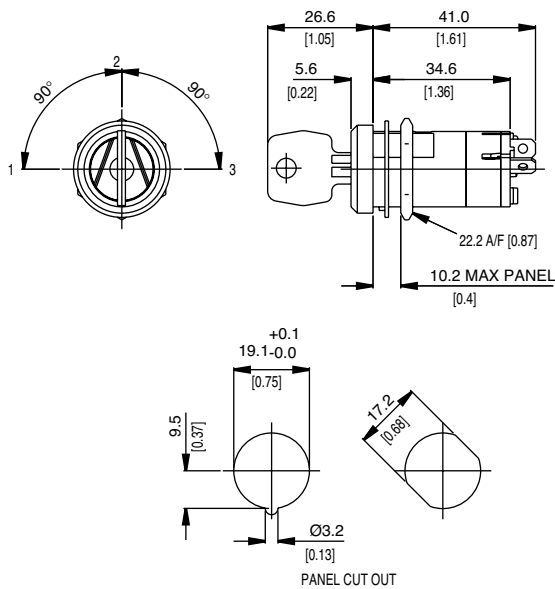
Preferred Range

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 (centre off)
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)	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations
12 VDC	10	-	-	UL 1054/CSA 22.2 No. 55 - 6,000 operations

K2

Operating Characteristics

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

Type coding key for standard products

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 centre off						

P2

Panel Mounted

Keylock

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

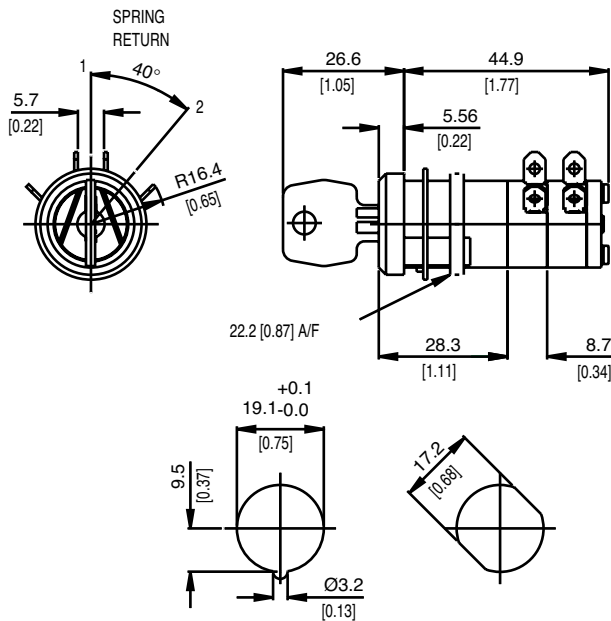
Ordering Reference	Terminal	Circuit	Actuator	Contacts	Electrical rating
P23FBA206	Screws	2 pole CO	Key	Ag	Up to 250 VAC, 2 A
P23FBA209	Screws	2 pole CO	Key	Ag	Up to 250 VAC, 2 A
P23FBC209	Screws	2 pole CO	Key	Ag	Up to 250 VAC, 2 A
P23FMA209	Screws	2 pole CO	Key	Ag	Up to 250 VAC, 2 A



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 Type	Code	Key trapping	Diagram
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	

Type coding key for standard products

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

Panel Mounted

Keyswitches

P5

Panel cut-out (mm) $\varnothing 20.6$

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)

- $\varnothing 38.1 \times 45.7$
off-on
- $\varnothing 38.1 \times 58.4$
change-over

Actuator

- key (common or different)

Approvals

UL and CSA



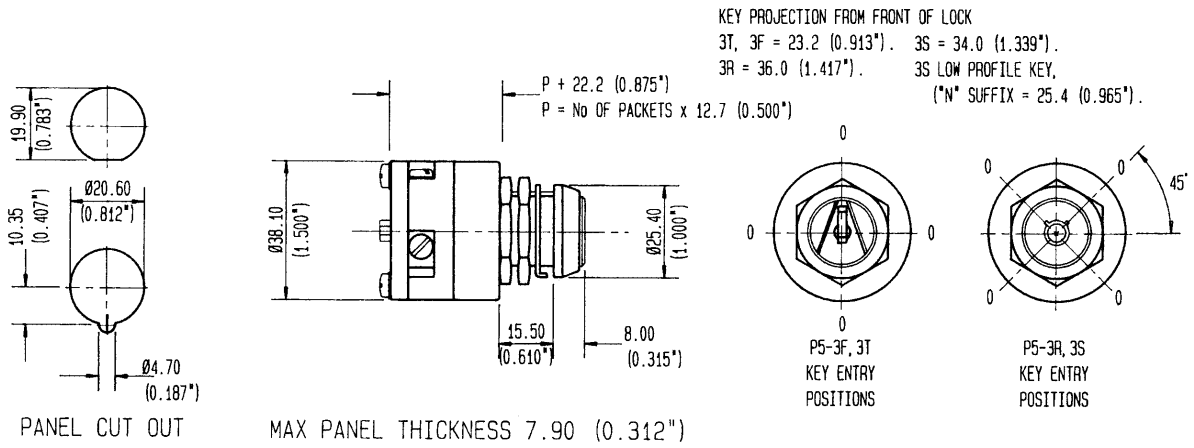
Preferred Range

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	

Type coding key for standard products

			Example: P5	3F	B	A	2	01
Basic type	P5							
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						





Joystick

Range:	Type	Popular Products	Page
Snap-action Microswitches	700	S 721001 S 741001 S 722001 S 742001 D 721001 D 741001 D 722001 D 742001	302
	J8	J84111113 J82111113 J84112113 J82112113 J82211113 J84211113	305
	H70	H701000 H702000 H701010 H702010	308
Snap-action Microswitches / Potentiometer	C700	C702000 C710000	311
Terminology			315



700

Joystick

Microswitches

700

Panel cut-out (mm) $\varnothing 22 \times 20$

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) $55 \times 55 \times 55.2$, miniature microswitches (380 series)
 $41.3 \times 41.3 \times 51.2$, subminiature microswitches (290 series)

Actuator

- knob

Approvals ENEC, UL and CSA (switch only)



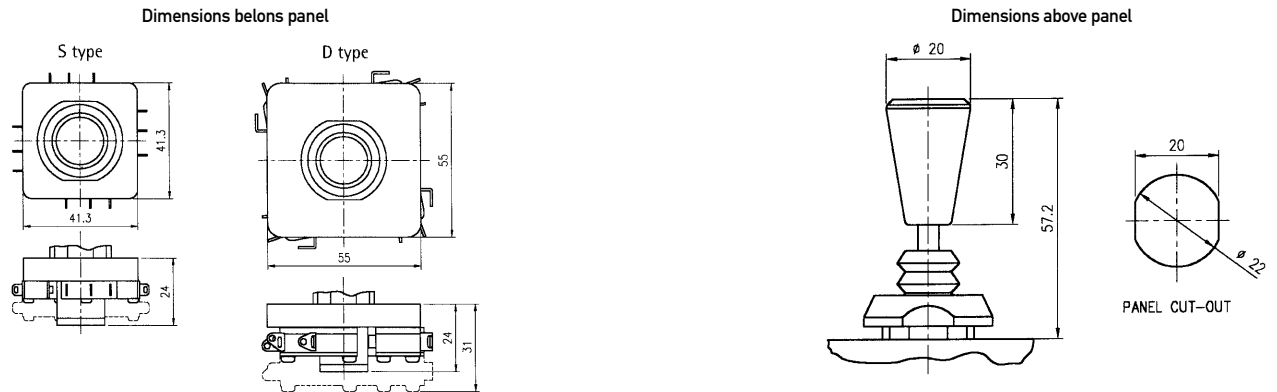
Popular products

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



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

Type coding key for standard products

Switch	S	290 Series subminiature microswitches	D	380 Series miniature microswitches	Example: S	7	1	1	0	0	1
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)		D Type (380)							
	0	292 (solder)		382 (solder)							
	1	291 (2.8 × 0.5 faston)		383 (6.35 × 0.8 faston)							
	2	294 – PCB – LH faston		385 (4.8 × 0.5 mm faston)							
Cowl fitted	1	Standard									

J8

Joystick

Microswitches

J8

Panel cut-out (mm)	Ø 22.5
Characteristics	<ul style="list-style-type: none"> ■ choice of directional gating options ■ choice of microswitch functions
Rating	<ul style="list-style-type: none"> up to 16 A, 250 VAC up to 5 A, 250 VAC
Dimensions (mm)	<ul style="list-style-type: none"> 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



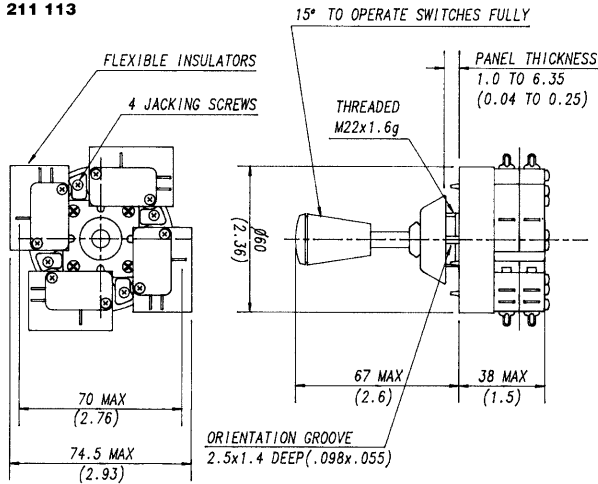
Specifications

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 SAIA-Burgess Electronics)

Dimensions

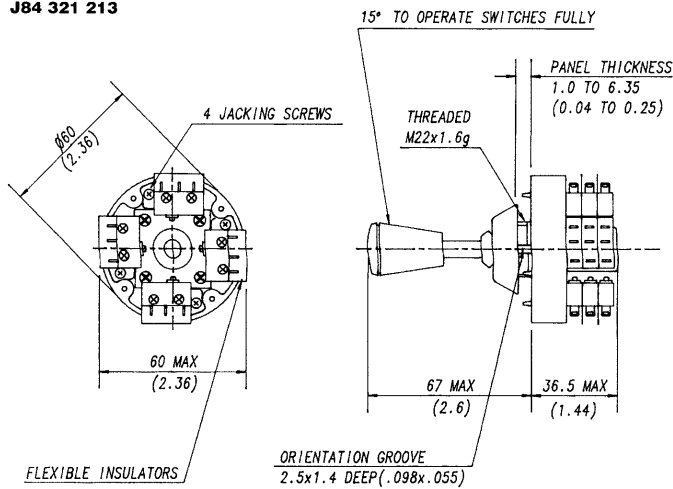
Dimensions below panel

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 to 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	

Type coding key for standard products

		Example: J8	0	1	1	1	113
Basic type	J8						
Number of gates	0 Ungated (stirring action) 2 2 gates at 180° 4 4 gates at 90°						
Number of switches mounted per gate	1 1 × V4NCT7 or 2 × XG03-88 2 2 × V4NCT7 or 2 × XG03-88 3 3 × V4NCT7 only						
Type of action	1 Momentary 2 Latching 4 Stirring						
Mode of operation	1 Normal (Direct push) 2 Lift to operate						
Type of micro switches fitted	113 XG03-88 213 V4NCT7						



H70

Panel Mounted

Joystick

H70

Panel cut-out (mm) $\varnothing 36.8 \times 22.2$

Characteristics

- single axis joystick controllers
- positive movement to full travel – central dead band
 - single or double pole versions

Rating 250 VAC, 6 A

Dimensions (mm) $60 \times 31.9 \times 57.1$

Actuator ■ paddle style

Approvals ENEC, UL and CSA (switch only)



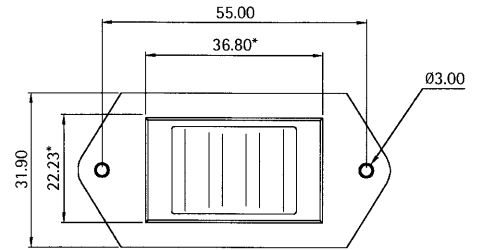
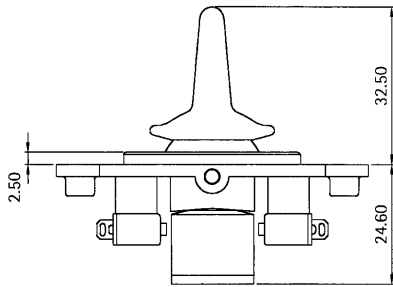
Popular products

Ordering Reference	Panel cut-out	Dimensions	Directional gating	Number of poles	Actuating modus	Switch type	Terminal Type	Electrical rating ENEC	UL/CSA
H701000	36.8×22.23	$64 \times 31.9 \times 57.1$	2 way gate at 180°	1 pole	Normal	292/20/150	Solder	6 A, 250 VAC, 25E3, T85	6 A, 250 VAC
H702000	36.8×22.23	$64 \times 31.9 \times 57.1$	2 way gate at 180°	2 pole	Normal	292/20/150	Solder	6 A, 250 VAC, 25E3, T85	6 A, 250 VAC
H701010	36.8×22.23	$64 \times 31.9 \times 57.1$	2 way gate at 180°	2 pole	Normal	291/20/150	Faston	6 A, 250 VAC, 25E3, T85	6 A, 250 VAC
H702010	36.8×22.23	$64 \times 31.9 \times 57.1$	2 way gate at 180°	2 pole	Normal	291/20/150	Faston	6 A, 250 VAC, 25E3, T85	6 A, 250 VAC

Specifications

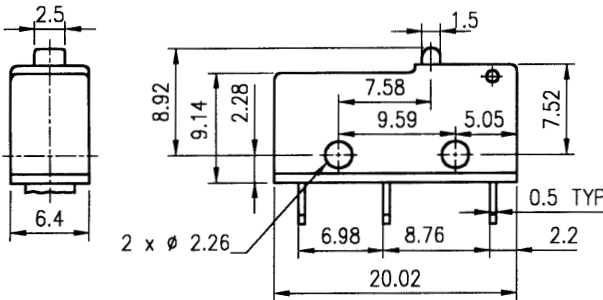
Switch	292/20/150 (solder) or 291/20/150 (faston)
Body and actuator	A.B.S
Spindle	Nylon 6.6
Spring	Stainless steel

Dimensions



* Suitable panel cutter: RS stock number 543-709 can be supplied with order at extra cost

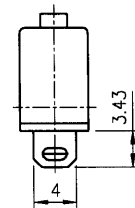
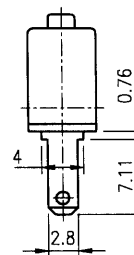
290 series subminiature switch



Terminal Reference

291
2.8 x 0.5
fast on

292
solder



Recommended maximum electrical ratings

Electrical rating	250 VAC, 6 A
Switch Type	292/20/150 (solder) or 291/20/150 (faston) with gold flashed contacts
Terminals	Solder or faston
Temperature rating	T85 °C
Insulation	>1250 V
Tracking resistance	PTI KB 250

Type coding key for standard products

Basic type	H 70	Single axis panel mounted joystick	Example: H70	1	0	0	0
Number of poles	1	Single pole					
	2	Double pole					
Spring return	0	Standard					
Terminal type	0	292 solder					
	1	291 faston					
Cowl	0	None					



C700

Joystick

Microswitch/Potentiometer

C700

Panel cut-out (mm) $\varnothing 12 \times 40$

Characteristics ■ choice of directional gating options to IP66 and IP67
■ choice of potentiometer, microswitch and switched knob functions

Rating up to 2 A, 250 VAC
up to 1 A, 250 VAC

Dimensions (mm) up to $58 \times 58 \times 93$

Actuator ■ knob

Approvals ENEC, UL and CSA (switch only)



Popular products, available upon request only

Ordering Reference	Panel cut-out	Dimensions	Directional gating	Number of poles	Switch type	Terminal Type	Electrical rating ENEC	UL/CSA
C702000	$\varnothing 12 \times 40$	$40.5 \times 50.0 \times 127$	2 way gate at 30°	1 pole	292/20/150	Solder	6 A, 250 VAC, 25E3, T85	6 A, 250 VAC
C710000	$\varnothing 12 \times 40$	$40.5 \times 50.0 \times 127$	2 way gate at 30°	Linearity +/-4%	Commercial Potentiometer	Solder	0.4W@40°C	6 A, 250 VAC

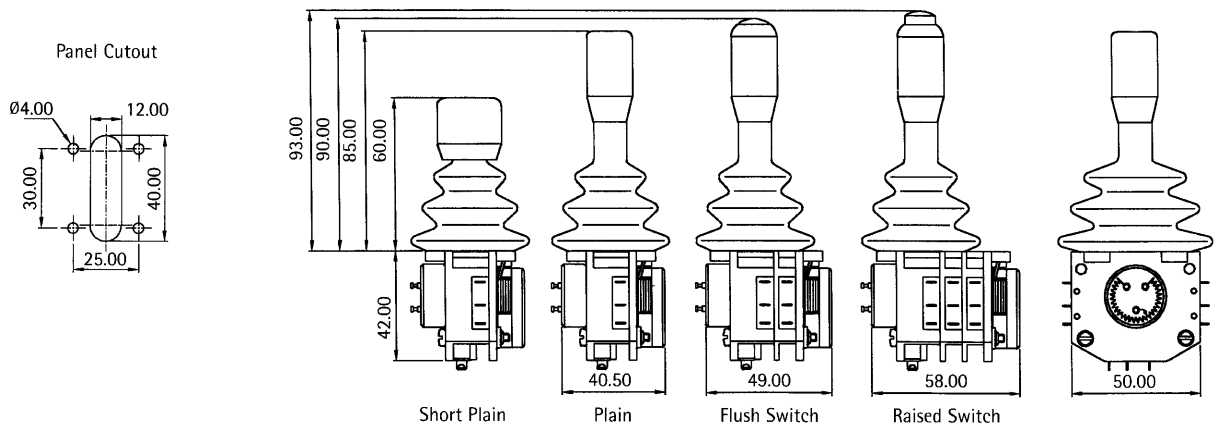


Specifications

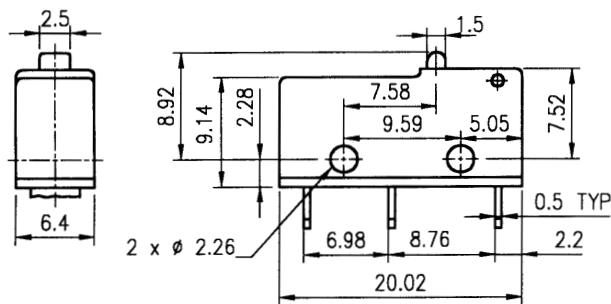
	Commercial Potentiometer	High Specification Potentiometer
Electrical Life	20,000 cycles	5,000,000 cycles
Tolerance	±20%	±20%
Linearity	±4%	±2%
Electrical Rotation	267° NOM	340° ±3%
Power Rating	0,4 W @ 40°C	1,0 W @ 70°C
Standard Value*	10 K	10 K

* Other values available to special order

Dimensions

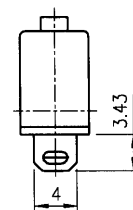


290 series subminiature switch



Terminal Reference

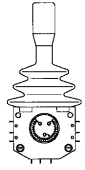
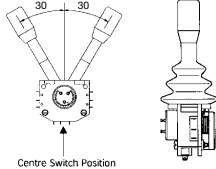
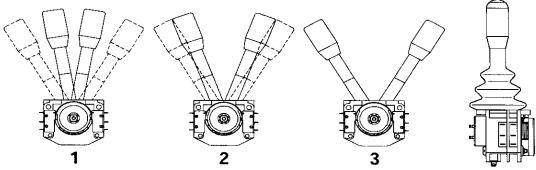
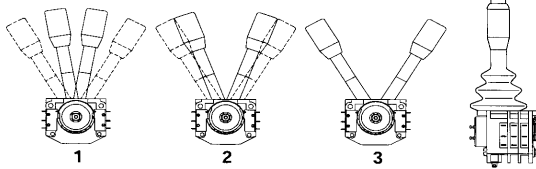
292 solder



Recommended maximum electrical ratings

IP Rating	Switched knob variants IP 66	
Switches	Subminiature Microswitches	Switch in Knob
Electrical Rating	(292/20/60) 2 A, 250 V, AC	1 A, 250 V, AC
Operational Life	5,000,000	1,000,000
Insulation Resistance	>1250 V	1050 V
Terminal Type	Solder*	Solder
Contacts	Silver/Gold flash	Silver Alloy/Gold Plated

Type coding key for standard products

Basic type	C 7	Potentiometer & Microswitch Joystick Range	Example: C700	0	0	0	0	0
Potentiometer Type	0 1 2	If no potentiometer is required (i.e. switching unit only) If a commercial grade potentiometer is required If a higher specification potentiometer is required						
Main Position Switch Option	0 1 2 3	If no switches are required (i.e. potentiometer unit only) If a switch is required in the centre position only If switches are required only at end of travel in both directions If both a centre switch and end of travel switches are required						
Second Pole Switch Options	0 1 2 3	If a second bank of switches is not required For 10° switch actuation For 20° switch actuation For 30° switch actuation						
Third Pole Switch Options	0 1 2 3	If a third bank of switches is not required For 10° switch actuation For 20° switch actuation For 30° switch actuation						
Knob Options	0 1 2 3	For a Plain Knob For a Knob with a Flush push button switch For a Knob with a Raised push button switch For a Short Plain Knob	(see page 308)					





Terminology: Panel Mounted

Operating Characteristics

Actuating Force/Operating Force

The force required to move the actuator from the free to the operating position.

Free Position

The position of the actuator when no external force is applied.

Movement Differential (Hysteresis)

The distance between operating and release position.

Operating Position

The position of the actuator when contact change-over takes place.

Overtravel

Movement of the switch actuator beyond the operating position.

Pre-travel

Movement of the switch actuator between free and operating position.

Post release travel

Movement of the switch actuator between release and free position.

Release Force

The value to which the applied force must be reduced to allow the mechanism to reset after operation.

Release Position

The position of the actuator when the switch mechanism resets.

Total Travel

The sum of pre-travel and overtravel.

Switch Technology

Butt Contacts – contacts that make at one point and maintain their initial relationship without further movement until they are opened.

Clearance Distance – the distance in air between current carrying parts of opposite polarity or between any current carrying part and an earthed-(grounded) metal plate to which the switch is attached.

Creepage Distance – the path along the surface of insulating material between current carrying parts of opposite polarity or between any current carrying part and an earthed (grounded) metal plate to which the switch is attached.

Insulation Resistance – resistance as measured between the normally closed terminals, or between all terminals connected together and a metal plate to which the switch is mounted. In dry conditions the value would be expected to be greater than 5M Ω .

Single Throw – a switch which provided an ON-OFF or OFF-ON function but does not change over from one conductor to another. Such switches

are usually referred to as being «normally-closed only» or «normally-open only».

Switching Cycle – one complete switching operating from free position into overtravel and back through release position to free position.

Switch Resistance – a total resistance offered by a switch in a circuit, as measured from terminal through mating contacts, to terminal.

Transit Time – the time taken by the moving contact in a snap-action mechanism to move from one stable position to another.

Wiping Contact – a moving contact mechanically arranged to slide across the fixed contact during pre-travel and overtravel.

Electrical Ratings

Electrical ratings given in the catalogue are ratings according to UL1054, CSA22.55 or IEC61058-1.

Where these are not available a general rating is given based upon in-house laboratory testing.

The ratings tables should be considered as safe working maximum for most applications. However, switch performance is influenced by a variety of factors, including:

- Frequency of operation
- Type of load
- Amount of travel used
- Temperature
- Humidity

Please do not hesitate to contact Saia-Burgess about your specific application.

Approvals

CSA mark. Switch meets CSA's safety standards

UL Recognized Component Mark for Canada and the United States

ENEC Mark. Switch fulfills European EN standards. The two digit number indicates which certification body has issued the ENEC Certificate

CCEE Mark. Switch fulfills standard GB 15092.1-94

Switch Life

a. **Electrical Life** – the electrical life data contained in this catalogue is based on laboratory controlled tests. In practice, frequency and speed of operation, type of load, suppression, actuator travel used, ambient humidity and temperature and other environmental conditions can have a major effect on switch life.

Individual assessments for specific applications are possible and can be undertaken by Saia-Burgess on request.

Please ask Saia-Burgess if you would like an assessment for your specific application.

b. **Mechanical Life** – the figures quoted relate to the number of switching cycles made without an electrical load.

Switch Drawings

All drawings in this catalogue are third angle projection.

All dimensions in this catalogue are nominal, except where specifically shown.

Application Technology

Shock and Vibration

If switches are likely to be subjected to shock or vibration, select models with the highest available actuating force.

Saia-Burgess switches feature low mass mechanisms which are inherently resistant to shock and vibration.

If possible, the switches should be mounted so that the line of acceleration is at right angles to the travel of the plunger. The maximum available overtravel should be used.

Direct Current

Direct current (DC) ratings where shown should not be exceeded if destructive arcing and contact welding are to be avoided.

Some form of arc suppression is recommended when switches are used in DC circuits containing inductive devices wired in series with the switch and the supply.

Lamp Loads

Because of the very high inrush currents associated with incandescent lamps, applications should be subject to individual assessment.

Capacitive Loads (including fluorescent lamps)

These can generate very high peak currents which can cause contact welding. Applications should be subject to individual assessment.

Inductive Loads

The general ratings tables included in this catalogue provide data for switches used to control inductive circuits at a power factor of 0.5. (EN 0.6; UL 0,7 means HP-Rating 0,5)

Contact Materials

Silver and silver alloys (AgNi 10, AgCdO10) are the primary contact materials used in Saia-Burgess switches.

The ratings tables shown refer to switches with silver/silver alloy contacts.

Gold contacts should be specified when switches are to be used in low voltage control or logic circuits, especially when long periods of inactivity are expected or when atmospheres with a high sulphur content may be encountered.

Typically they should be considered for voltages below 12 volts and currents less than 100mA. Gold contacts are generally available in two forms; gold plated silver alloy contacts, which can also be used at higher currents. Gold alloy cross-point contacts, which are only suitable for switching low currents.

Switch Actuation

Direct Operation

Actuating plungers should be operated in the direction of their axis. Where this is not possible the use of actuating levers is recommended. For direct actuation the attack angle should not exceed 30°.

Actuating Levers

Various lever types are available for use with Saia-Burgess switches. They are generally stainless steel.

If roller or cam-follower levers are approached in the reverse direction, care must be taken to ensure that the angle of approach is small enough not to jam the lever.

Actuation by Cams

Cam-follower levers are particularly well suited for use with plastic actuating cams.

Abrupt actuation or release of switch actuators shortens the life of the switches.

For this reason cam should preferably provide a continuous movement. Ideally they should be of cycloidal form.

Environmental Protection

Protection Classifications

The protection classes of Saia-Burgess switches are in accordance with IEC 529 and are covered by just four codes.

IP40

Adequate protection against solids such as probing fingers and small wires >1mm. Liquids however can gain access and, unless externally protection, the switches should be mounted in dry or well-sheltered positions.

IP54

Good protection against solid foreign bodies, including dust and water splashing against the enclosure from any direction.

Switches may be used out of doors if sheltered from the worst of the elements or on factory machines subjected to normal washing down procedures.

IP65

Complete protection against solids, including dust, and against low pressure jets of water from all directions.

IP67

Complete protection against solids including dust and against immersion in water at a specific pressure for a specified time.

We reserve this code for switches which are factory sealed and tested.

Switches should not be immersed in any liquid.

Working Temperatures

For details of the working temperatures applicable to individual types, refer to the appropriate specification sheet. Special versions suitable for temperatures outside these ranges may be possible. Please contact us for information.

All quoted temperatures assume stable operation. They do not imply an ability to withstand excessive cycling within the range.

Health & Safety

Saia-Burgess has ensured, so far as it is reasonably practicable, that their products as described in this catalogue or in other current company publications, or as specified on Saia-Burgess installation drawings. They have been so designed and constructed as to be safe and without risk to health when installed by suitably qualified personnel in accordance with relevant legislation, codes of practice, regulations (including IEE Wiring Regulations), the installation recommendations offered by the company and the accepted rules of the art. Their usage should be confined within the ratings limitations and parameters of-application indicated in this catalogue and elsewhere.

Please contact us should you need additional information or guidance.

Service Recommendations

Maintenance

Saia-Burgess switches are not user-maintainable but they should be kept in a reasonably clean, paint-free condition, especially in the actuator area. Regular checks should be made on mounting security and on the actuating medium to switch actuator relationship.

Lubrication or the use of aqueous or chemical cleaning fluids is not recommended.

Installation Recommendations

The following notes are intended merely to stress the most important and general aspects of good switch installation procedure and to provide some helpful additional information.

Safety Consideration

Installation should only be carried out by competent personnel.

Switch Positioning and Operation

Pre-loading of the switch actuator must be avoided. The actuating medium must be able to operate the switch through the operating position into overtravel and then to retract far enough to allow the switch to regain its free position.

Saia-Burgess recommends that the actuating medium should drive the switch into at least 50% of the available overtravel.

All ratings tables shown in this catalogue are based on the use of all the available overtravel.

Mounting

Side mounting switches should be mounted on smooth, firm, flat surfaces using the recommended screw size. Avoid over tightening the screws. For added security, they should be locked using epoxy resin. Do not attempt to enlarge switch mounting holes and avoid over stressing the switch. Use insulating material between the switch and metallic plates to increase clearance on switches with open terminals.

Connections

When soldering, over-heating of the switch insulation must be avoided. In certain circumstances, it may be advisable to use a heat shunt. For optimum mechanical strength, the conductor should be wrapped round the tip of the terminal taking care to avoid loose strands of wire.

The soldering iron tip should be applied to the end of the terminal while simultaneously applying solder. Remove the iron as soon as the solder has wetted the conductor and terminal end. A soldering iron tip temperature of 350°C (260°C/5 seconds for PCB Terminals) applied for a maximum of 2-3 seconds should be adequate.

Installation Recommendations (EN 61058-1)

Mounting Holes and Screw sizes				Mounting Screw Torque
Normal hole Diameter (mm)	Normal hole Diameter (in)	Metric Screw	Unified Thread Screw	For guidance when using mild steel screws:
2.2/2.3	0.067/0.091	M2	#2	M2 or #2 screws 0.5Nm
3.1/3.2	0.122/0.126	M3	#4	M3 or #4 screws 0.5Nm
3.6/3.7	0.142/0.146	M3.5	#6	M3.5 or #6 screws 0.8Nm
5.1/5.2	0.201/0.205	M5	#10	M5 or #10 screws 3.0Nm