Panel Mounted Switches – TP7

TP7

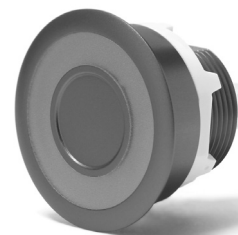|	
Panel cut-out (mm)	⌀ 16.2/22.5/30.3/43.3
Characteristics	■ piezo technology ■ momentary ■ sealed IP68 ■ with or without illumination, two colors ■ solid state output
Rating	3 to 35 VAC/VDC, 200 mA
Dimensions (mm)	Ø 18 Ø 25 Ø 36 Ø 48
Actuator	housing in different colors
Approvals	None

Specifications

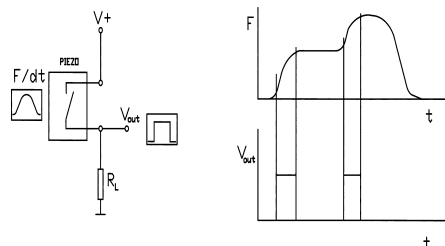|	
Mechanism	Piezo electronic, without auxilliary energy
Actuating force	5N maximum at an actuating speed 500 to 1500 mm/s
Closing impulse duration	10 to 1000 m/s - dependent on force and speed of actuation
Mounting	Central fixing from the rear with metal lock nut
Protection	IP68 (after installation)
Housing and actuator material	Anodised aluminum and stainless steel
Illumination	LED (18mm switch non–illuminated only)
Temperature range °C	-40°C to +105°C (non–illuminated), -40°C to +85°C (illuminated)
Life expectancy	$>15 \times 10^6$ cycles
Contact resistance	<10 Ohm (on)
Insulation resistance	>5MOhm (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

Recommended maximum electrical ratings

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

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.
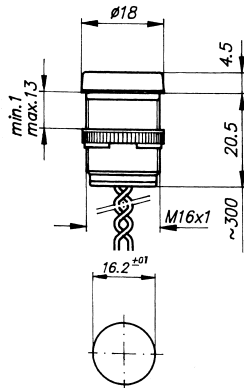
The circuit state diagram shows the approximate relationship between the force/time curve to the voltage circuit state:
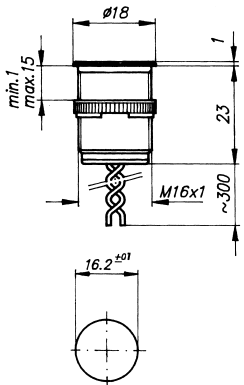
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Dimensions (mm) **Non-illuminated**

Circuit diagram

Ø 18, raised housing, prewired

Ø18
4.5
min.1
max.13
20.5
M16x1
~300
16.2 ±01

circuit 129

3...35Vac/dc max.0,2A

closed circuit current
< 5 µA

NO

Ø 18, flush housing, prewired

Ø18
1
min.1
max.15
23
M16x1
~300
16.2 ±01

circuit 129

3...35Vac/dc max.0,2A

closed circuit current
< 5 µA

NO
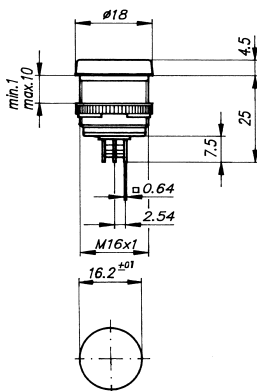
Ø 18, raised housing, Molex-style 3 pin
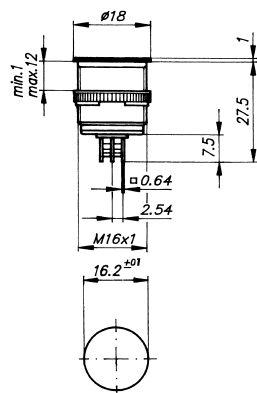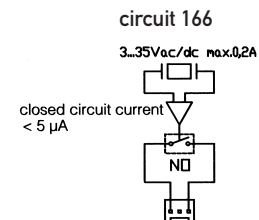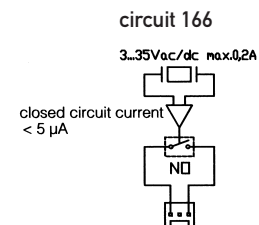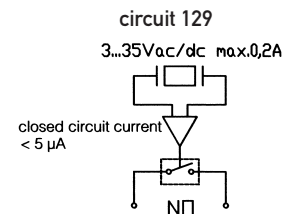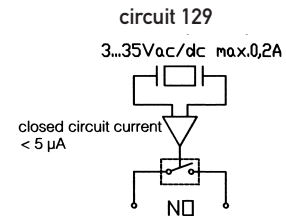
Ø18
4.5
min.1
max.10
25
7.5
0.64
2.54
M16x1
16.2 ±01

circuit 166

3...35Vac/dc max.0,2A

closed circuit current
< 5 µA

NO

Ø 18, flush housing, Molex-style 3 pin

Ø18
1
min.1
max.12
27.5
7.5
0.64
2.54
M16x1
16.2 ±01

circuit 166

3...35Vac/dc max.0,2A

closed circuit current
< 5 µA

NO

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Dimensions (mm) **Non-illuminated**

Ø 25, raised housing, prewired
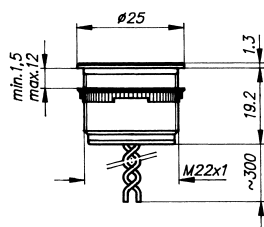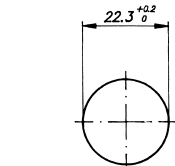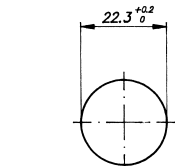
ø25

min.1,5
max.10

6

16

M22x1

~300

22.3 $^{+0.2}_{0}$

Circuit diagram

circuit 130

3...35Vac/dc max.0,2A

closed circuit current
< 5 µA

NO

Ø 25, flush housing, prewired

ø25

min.1,5
max.12

1,3

19.2

M22x1

~300

22.3 $^{+0.2}_{0}$

circuit 130

3...35Vac/dc max.0,2A

closed circuit current
< 5 µA

NO

Ø 25, raised housing, solder connections 2.8 × 0.8

ø25

min.1,5
max.6

6

0,7

13.2

M22x1

Pin connection 2.8 x 0.8
(similar DIN 46244)

22.3 $^{+0.2}_{0}$

circuit 164

3...35Vac/dc max.0,2A

closed circuit current
< 5 µA

NO

Ø 25, raised housing, solder connections 2.8 × 0.8

ø25

min.1,5
max.6

1,3

3,6

16.3

M22x1

Pin connection 2.8 x 0.8
(similar DIN 46244)

22.3 $^{+0.2}_{0}$

circuit 164

3...35Vac/dc max.0,2A

closed circuit current
< 5 µA

NO

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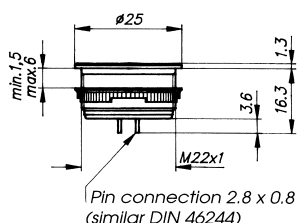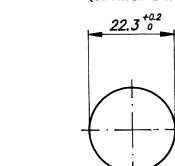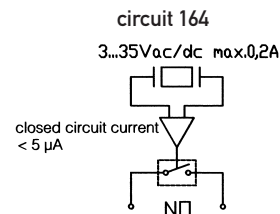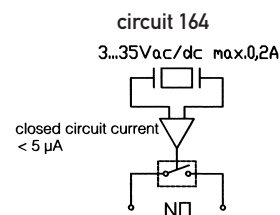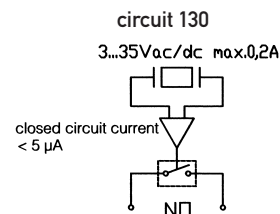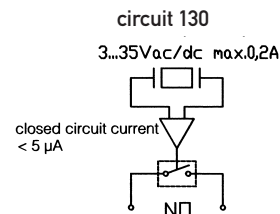
Dimensions (mm)   **Illuminated**
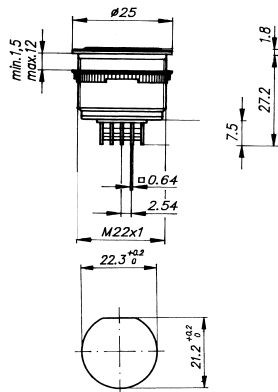
∅ 25, flush housing, Molex-style 5 pin

Circuit diagram

circuit 170
Piezo
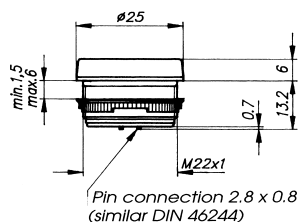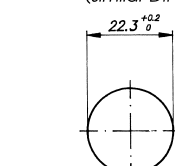3...35Vac/dc max.0,2A   LED 24Vdc 20mA
closed circuit current
< 5 µA
gn
NO
(+) (−)

circuit 171
Piezo
3...35Vac/dc max.0,2A   LED 24Vdc 20mA
closed circuit current
< 5 µA
rd
NO
(+) (−)

circuit 174
Piezo
3...35Vac/dc max.0,2A   LED 12Vdc 40mA
closed circuit current
< 5 µA
gn
NO
(+) (−)

circuit 178
Piezo
3...35Vac/dc max.0,2A   LED 12Vdc 2x20mA
closed circuit current
< 5 µA
gn   rd
NO
(+) (−) (+)

circuit 175
Piezo
3...35Vac/dc max.0,2A   LED 12Vdc 40mA
closed circuit current
< 5 µA
rd
NO
(+) (−)

circuit 179
Piezo
3...35Vac/dc max.0,2A   LED 24Vdc 2x20mA
closed circuit current
< 5 µA
gn   rd
NO
(+) (+)

∅ 36, flush housing, Molex-style 6 pin   Circuit diagram
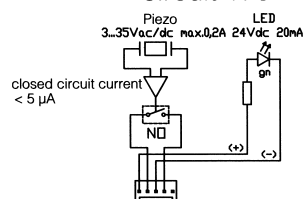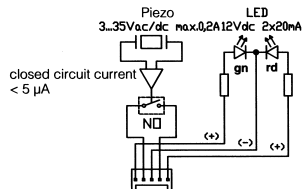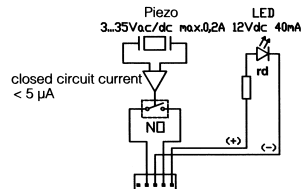
Circuit diagrams

circuit 180
Piezo
3...35Vac/dc max.0,2A   LED 24Vdc 20mA
closed circuit current
< 5 µA
gn
NO
(+) (−)

circuit 181
Piezo
3...35Vac/dc max.0,2A   LED 24Vdc 20mA
closed circuit current
< 5 µA
rd
NO
(+)

circuit 184
Piezo
3...35Vac/dc max.0,2A   LED 12Vdc 40mA
closed circuit current
< 5 µA
gn
NO
(+) (−)

circuit 159
Piezo
3...35Vac/dc max.0,2A   LED 24Vdc 2x20mA
closed circuit current
< 5 µA
gn   rd
NO
(+) (−) (+)

circuit 185
Piezo
3...35Vac/dc max.0,2A   LED 12Vdc 40mA
closed circuit current
< 5 µA
rd
NO
(−) (+)

circuit 188
Piezo
3...35Vac/dc max.0,2A   LED 12Vdc 2x20mA
closed circuit current
< 5 µA
gn   rd
NO
(−) (+)

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Dimensions (mm)   **Illuminated**

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

Circuit diagram

Internally wired visual indicator, red

circuit 141
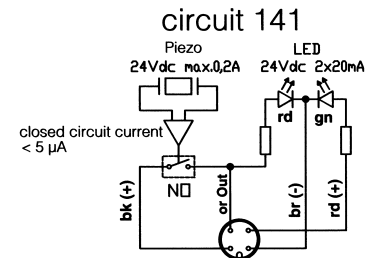
Piezo   LED
24Vdc max.0,2A   24Vdc 2x20mA

closed circuit current
< 5 µA

rd   gn

bk (+)   NO   or Out   br (–)   rd (+)

circuit 142

Piezo   LED
24Vdc max.0,2A   24Vdc 2x20mA

Internally wired visual indicator, green

closed circuit current
< 5 µA

gn   rd

bk (+)   NO   or Out   br (–)   rd (+)

M30x1.5

43.3⁺⁰·²

∅ **48, flush housing, Molex-style 6 pin**

Circuit diagram

circuit 158

Piezo   LED
3...35Vac/dc max.0,2A   12Vdc 2x40mA

closed circuit current
< 5 µA

gn   rd

NO

(+)   (–)   (+)

circuit 159

Piezo   LED
3...35Vac/dc max.0,2A   24Vdc 2x20mA

closed circuit current
< 5 µA

gn   rd

NO

(+)   (–)   (+)

M30x1.5

43.3⁺⁰·²
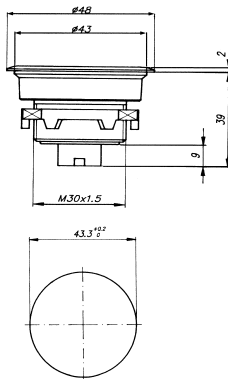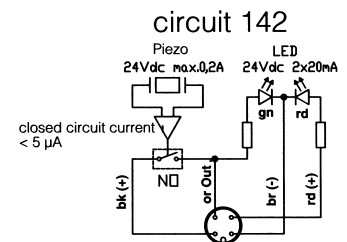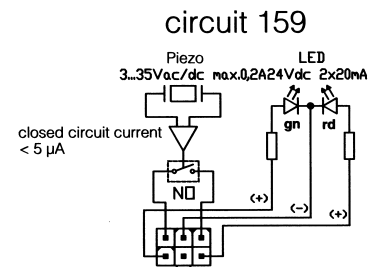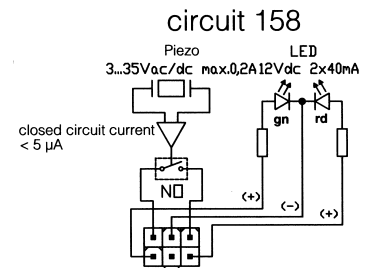
Amp is a registered tradename of Tyco International Ltd.

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Ordering Reference

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Range	TP7

Panel cut-out	1	16.2 mm (for ∅ 18 mm only)
	2	22.5 mm (for ∅ 25 mm only)

		Function	Actuator	Housing	Connector	Environmental protection	Part No. color (XX)
Switch body	MD1A	Momentary 1NO; 35V / 0.2A	∅ 18 mm	Raised Aluminum	Prewired	IP68	TH7020XX129
	MD2A	Momentary 1NO; 35V / 0.2A	∅ 18 mm	Raised Aluminum	3 Pin MOLEX	IP68	TH7025XX166
	MD1B	Momentary 1NO; 35V / 0.2A	∅ 18 mm	Flush Aluminum	Prewired	IP68	TH7021XX129
	MD2B	Momentary 1NO; 35V / 0.2A	∅ 18 mm	Flush Aluminum	3 Pin MOLEX	IP68	TH7026XX166
Non-illuminated	MF1A	Momentary 1NO; 35V / 0.2A	∅ 25 mm	Raised Aluminum	Prewired	IP68	TH7030XX130
	MF2A	Momentary 1NC; 35V / 0.2A	∅ 25 mm	Raised Aluminum	Prewired	IP68	TH7030XX131
	MF4A	Momentary 1NO; 35V / 0.2A	∅ 25 mm	Raised Aluminum	2.8 × 0.8 mm	IP68	TH7035XX164
	MF1B	Momentary 1NO; 35V / 0.2A	∅ 25 mm	Flush Aluminum	Prewired	IP68	TH7031XX130
	MF2B	Momentary 1NC; 35V / 0.2A	∅ 25 mm	Flush Aluminum	Prewired	IP68	TH7031XX131
	MF4B	Momentary 1NO; 35V / 0.2A	∅ 25 mm	Flush Aluminum	2.8 × 0.8 mm	IP68	TH7036XX164
Illuminated	MG1B	Momentary 1NO; 35V / 0.2A 12V/40mA LED red	∅ 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX175
	MG2B	Momentary 1NO; 35V / 0.2A 24V/20mA LED red	∅ 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX171
	MG3B	Momentary 1NO; 35V / 0.2A 12V/40mA LED green	∅ 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX174
	MG4B	Momentary 1NO; 35V / 0.2A 24V/20mA LED green	∅ 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX170
	MG5B	Momentary 1NO; 35V / 0.2A 12V/40mA LED red/green	∅ 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX178
	MG6B	Momentary 1NO; 35V / 0.2A 24V/20mA LED red/green	∅ 25 mm	Flush Aluminum	5 pin MOLEX	IP68	TH7055XX179

Actuator color (XX)	00	Natural
	01	Yellow
	02	Green
	04	Red
	05	Black
	08	Dark Blue

Please select appropriate color code reference to complete the switch part no, eg. TH702004129

Illumination	X	Non-illuminated	
	B	12V	(for illuminated switch bodies only)
	C	24V	(for illuminated switch bodies only)

Illumination color	X	Non-illuminated	
	2	Green LED	(for illuminated switch bodies only)
	4	Red LED	(for illuminated switch bodies only)
	9	Red/Green LED	(for illuminated switch bodies only)

Stainless steel versions, available upon request.

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Panel Mounted Switches – TP7

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Range	TP7						
Panel cut-out	3	30.3 mm (for ⌀ 36 mm only)					
	4	43.3 mm (for ⌀ 48 mm only)					

		Function	Actuator	Housing	Connector	Environmental protection	Part No. color (XX)
Switch body Illuminated	MH1B	Momentary 1NO; 35V / 0.2 A 12V/40mA LED red	⌀ 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX185
	MH2B	Momentary 1NO; 35V / 0.2 A 24V/20mA LED red	⌀ 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX181
	MH3B	Momentary 1NO; 35V / 0.2 A 12V/40mA LED green	⌀ 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX184
	MH4B	Momentary 1NO; 35V / 0.2 A 24V/20mA LED green	⌀ 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX180
	MH5B	Momentary 1NO; 35V / 0.2 A 12V/2×20mA LED red/green	⌀ 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX188
	MH6B	Momentary 1NO; 35V / 0.2 A 24V/2×20mA LED red/green	⌀ 36 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7065XX159
Illuminated	MJ1B	Momentary 1NO; 35V, 0.2 A 24V, 2×20 mA LED green/red	⌀ 48 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7062XX159
	MJ2B	Momentary 1NO; 35V, 0.2 A 12V, 2×40 mA LED green/red	⌀ 48 mm	Flush Aluminum	6 pin MOLEX	IP68	TH7062XX158
	MJ3B	Momentary 1NO; 24V, 0.2 A 24V, 2×20 mA LED red/green	⌀ 48 mm	Flush Aluminum	4 pin AMP	IP68	TH7062XX141
	MJ4B	Momentary 1NO; 24V, 0.2 A 24V, 2×20 mA LED green/red	⌀ 48 mm	Flush Aluminum	4 pin AMP	IP68	TH7062XX142

Actuator color (XX)	00	Natural	
	01	Yellow	
	02	Green	Please select appropriate color code reference
	04	Red	to complete the switch part no. above eg. TH706502185
	05	Black	
	08	Dark Blue	
Illumination	X	Non-illuminated	
	B	12V	(for illuminated switch bodies only)
	C	24 V	(for illuminated switch bodies only)
Illumination color	X	Non-illuminated	
	2	Green LED	(for illuminated switch bodies only)
	4	Red LED	(for illuminated switch bodies only)
	9	Red/Green LED	(for illuminated switch bodies only)

Stainless steel versions, available upon request.

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		
TH593567000	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)	Pairs of screws for TP4, TP5
TH493522000	(for 2 contact blocks)	
TH493523000	(for 3 contact blocks)	

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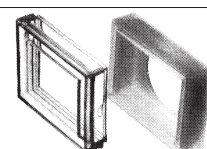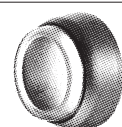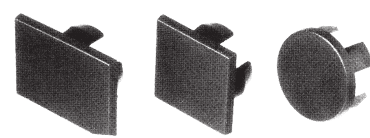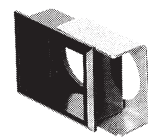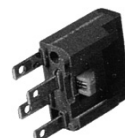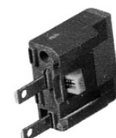
Accessories

TH493012000   Guard bracket, for switches ⌀ 18, anodised aluminum

TH493020000   Guard bracket, for switches 18 × 24, black plastic (all sides raised)
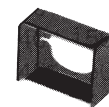
TH593032000   Protecting cover with transparent plastic lid, 18 × 18

TH593035000   Protecting cover with transparent plastic lid, 18 × 24

Anti-rotation devices (TK2, TR2, TE8)

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

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

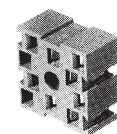TH593080000   Adapter set, key- and rotary switches (TK2, TR2)

TH060661000   panel cut-out 16.2 mm (TE8)
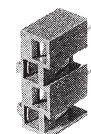
Plug in socket (TP2)

TH593578000   for 1 contact block TP2 with indicator terminals
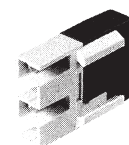
TH593568000   for 2 contact blocks TP2 with indicator terminals

TH593582000   for 1 contact block TP2 without indicator terminals

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

Accessories

Extra and spare keys (TK2)

TH493049001 to   TH493049020 (KABA MICRO, EB0001 – EB0020)

Faston Connectors (TP2, TK2, TR2, TP8)

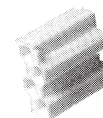TH593571000   Faston pin, 2.8 × 0.5 mm, insulated, for wires 0.8 – 1.4 mm2 (TP2, TK2, TR2)

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)

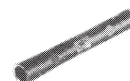TH593574000   Sleeve and casing for th25 contact block 1 NO + 1 NC (TP2, TK2, TR2)

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

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Email usa.sales@saia-burgess.com   For Technical Assistance: 800-429-0365   55
In Canada: 416-299-0852   Fax: 416-299-6756

Accessories

Miscellaneous (Lamp extractor, metal and plastic spanners)

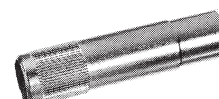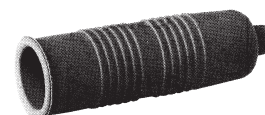|		
TH492000000	Lamp extractor	
TH492005000	Lens extractor	
TH492100000	Metal box-spanner, fixation nut M16 × 1	
TH492105000	Metal box-spanner, fixation nut M22 × 1	
TH493510000	Insulated terminal cover, for terminal wires	

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