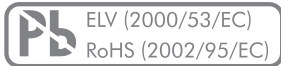


MAIN FEATURES**PUSH TO TURN FUNCTION**

- Integrated "push to turn" function
- Push forces up to 11 N
- BCD coding 2 to 10 positions
- Shorting or non-shorting
- Switching torque up to 7 Ncm
- For rugged environments
- Gold plated contacts
- THT (reflow version on request)
- Washable (sealed contact system)
- Front panel sealing IP68 (up to 5 bar)
- Operating temperature range: -40 to +85°C
- Various options and customizations

**PRODUCT VARIETY**

- Push to turn function
(all positions locked or on-off locked)
- Shaft length
- Shorting or non-shorting
- Terminal style (horizontal; vertical)
- Front panel sealing IP60 or IP68
- Number of positions
- With End-Stop or endless rotating

TYPE 07P2T**POSSIBLE CUSTOMIZATIONS**

- Shaft dimension and shape
- Bushing, mounting
- Switching torque
- Hex or Gray coding
- Pull to turn function
- IP sealing

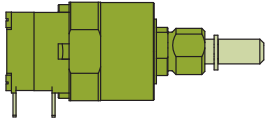
TYPICAL APPLICATIONS

- Frequency and channel selection for two way radios
- Target aiming devices
- Aircraft transponders
- Medical equipment
- Industrial automation
- Cockpit applications

1 PREFERENCE TYPES SELECTION CHART

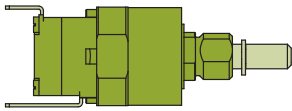
¹ For other types/options, see type key.

HORIZONTAL, STANDARD-POSITIONS (BCD: 10 POS.), SHORTING, STANDARD SHAFT LENGTH 14 mm, IP68



CODING	POSITIONS / INDEXING ANGLES	TORQUE	PUSH TO TURN	STANDARD BCD 10 POS. (0-9)
BCD	10 (09) / 36°	7 Ncm	All positions locked	07P2T-1330-714S000S
			On-off locked	07P2T-1330-71400S0S
BCD compl.	10 (09) / 36°	7 Ncm	All positions locked	07P2T-1430-714S000S
			On-off locked	07P2T-1430-71400S0S

VERTICAL, STANDARD-POSITIONS (BCD: 10 POS.), SHORTING, STANDARD SHAFT LENGTH 14 mm, IP68

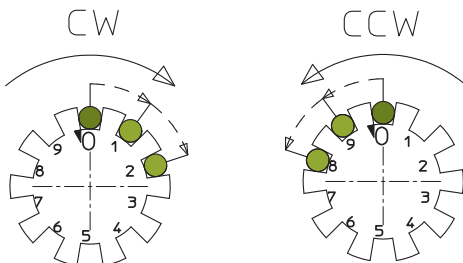


CODING	POSITIONS / INDEXING ANGLES	TORQUE	PUSH TO TURN	STANDARD BCD 10 POS. (0-9)
BCD	10 (09) / 36°	7 Ncm	All positions locked	07P2T-3330-714S000S
			On-off locked	07P2T-3330-71400S0S
BCD compl.	10 (09) / 36°	7 Ncm	All positions locked	07P2T-3430-714S000S
			On-off locked	07P2T-3430-71400S0S

PUSH TO TURN EXPLANATION

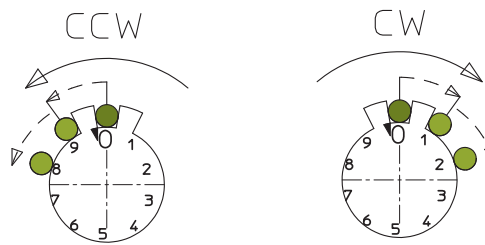
ALL POSITIONS LOCKED

Before actuation every position is locked.



ON-OFF LOCKED

Before actuation only position 0 is locked. All other positions are movable.



CODING

For all available Coding please see technical explanations at the end of the catalog.

SPECIFICATIONS

MECHANICAL DATA

Resolution:	BCD: 10 positions max. (36° indexing)
Switching mode:	Shorting or non-shorting
Push to turn force:	11N
Switching torque (new condition):	7 Ncm (+/- 25%)
Rotational life:	10,000 cycles min.
End-Stop strength:	70 Ncm min.
Fastening torque of nut (front panel mounting):	100 Ncm max.

ELECTRICAL DATA

Coding/output:	BCD, BCD complementary (shorting or non-shorting)
Contact resistance (new condition):	50 mΩ max. (10 Ω max. end of life)
Insulation resistance (new condition):	1 GΩ min. @ 500 VDC
Max. switching/breaking capacity:	5 VA
Switching current:	0.2 A (resistive load) max.
Switching voltage:	42 V (resistive load) max.
Dielectric withstanding voltage:	500 VDC during 60 seconds (pin to pin, pin to housing)

MATERIAL DATA

Shaft:	Stainless steel
Snap ring:	Stainless steel
Housing:	Zinc diecast, fiber enforced high performance plastic
Hex-nut:	Brass (Nickel plated)
Slotted nut:	Brass or stainless steel
Contact system:	CuBe alloy, AuCo plated (hard gold)
Soldering leads:	CuBe alloy, tin plated
Lock washer:	Steel (blue zinc plated)
Front panel sealing:	EPDM (cell rubber)
O-rings:	NBR (nitrile), 70 shore

ENVIRONMENTAL DATA

Operating/storage temperature range:	-40 to +85°C max.
IP sealing:	IP60, optional IP68 (2 bar, 1 h) shaft/front panel sealing (5bar, 4 h on request)
Vibration:	10 G _{rms} max. @ 10 to 2000 Hz
Flammability:	UL94-HB

SOLDERING CONDITIONS

Hand soldering:	280°C max. during 2 sec max.
Wave soldering:	280°C max. during 2 sec max.

PACKAGING QUANTITY

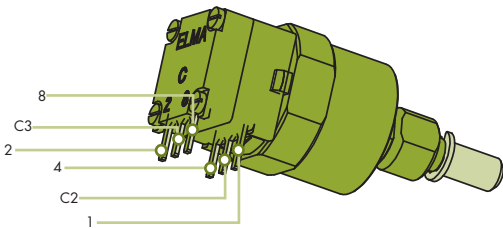
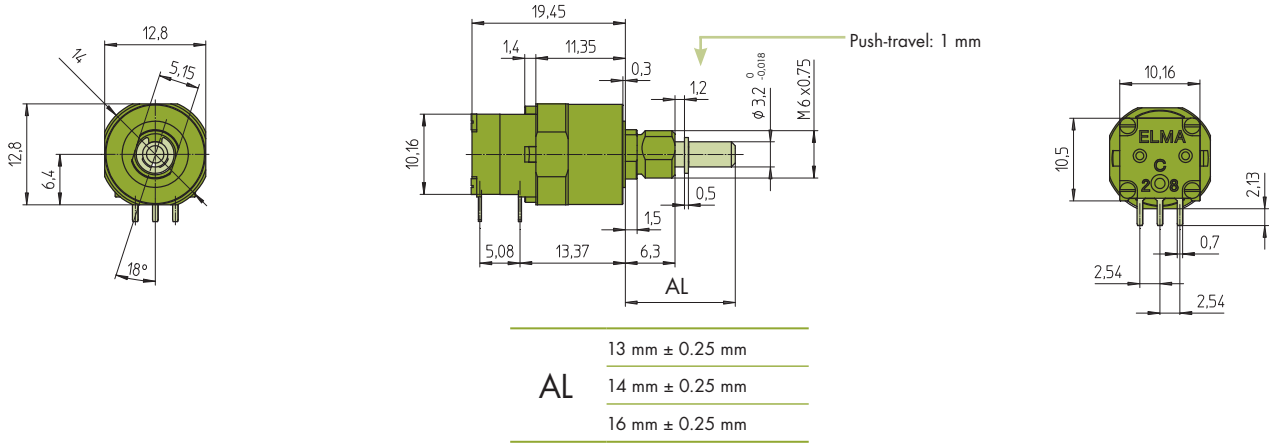
Standard tray:	25 pcs. or 50 pcs.
----------------	--------------------

DRAWINGS

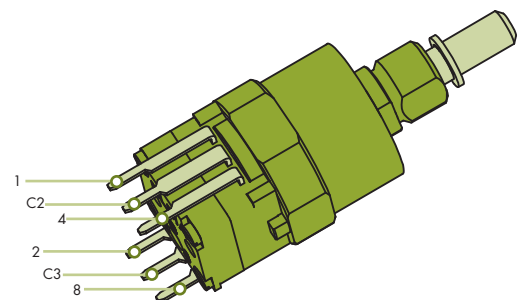
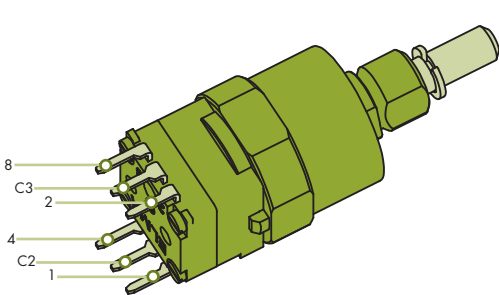
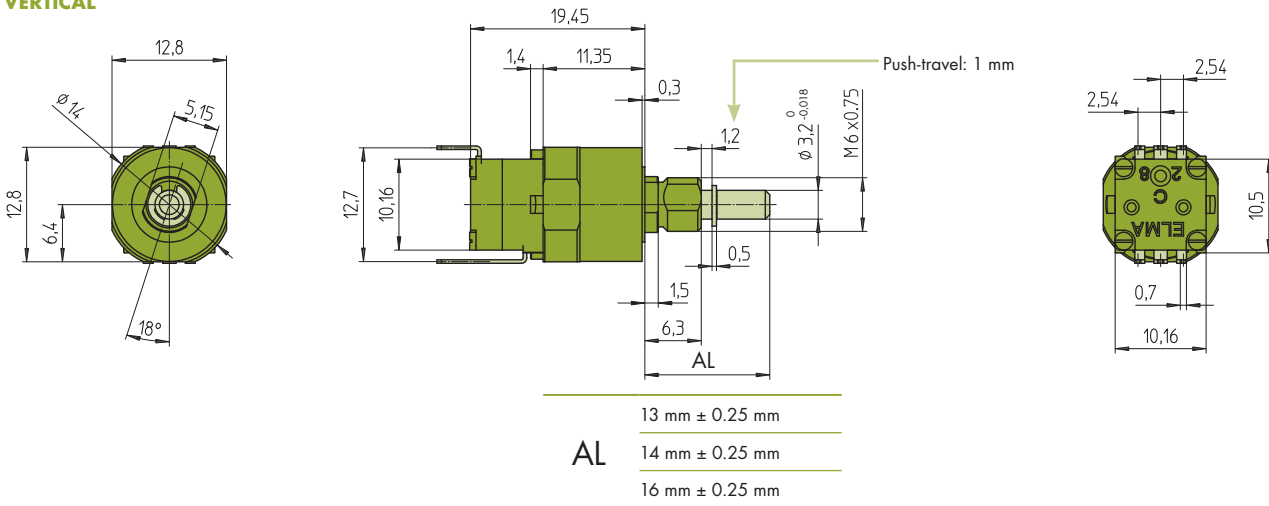
Tolerances unless otherwise specified DIN ISO 2768-1 (m)

SWITCH DESIGN

HORIZONTAL



VERTICAL



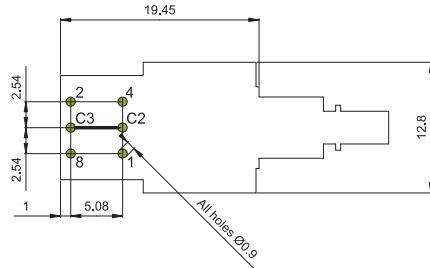
DRAWINGS

Tolerances unless otherwise specified DIN ISO 2768-1 (m)

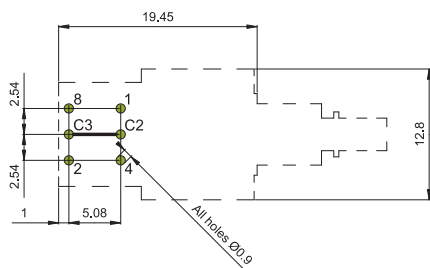
DRILLING DIAGRAMS

HORIZONTAL

Commons (C2, C3) must be connected together on the PCB



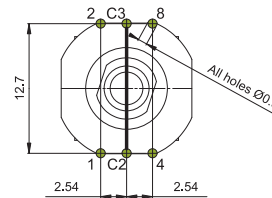
View from switch mounting side of the PCB



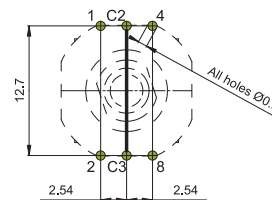
View from soldering side of the switch

VERTICAL

Commons (C2, C3) must be connected together on the PCB

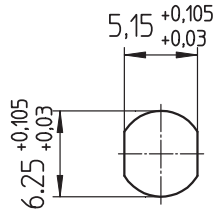


View from switch mounting side of the PCB



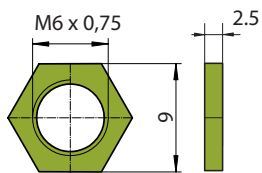
View from soldering side of the switch

FRONT PANEL CUT OUT



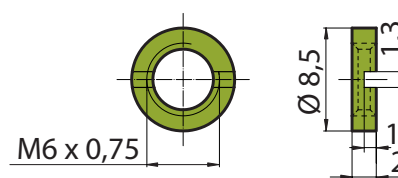
NUT, LOCK WASHER, FRONT PANEL SEALING

HEX NUT



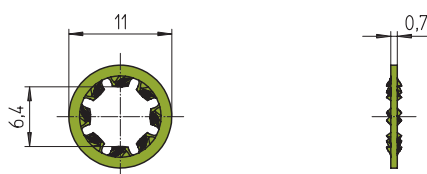
Spare part
Order number (50 pcs. bag)
- Brass: 4424-22

SLOTTED NUT

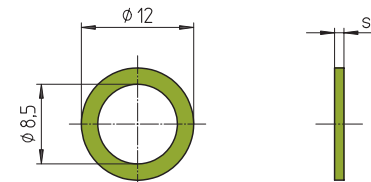


Order number (50 pcs. bag)
- Brass: 4424-28
- Stainless steel (cross slot): 4424-31

LOCK WASHER



FRONT PANEL SEALING



TYPE KEY

07 P2T	-	-	-	-	-	-	-	-	-	-	-	-	-	-
---------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TERMINAL STYLE

- 1** Horizontal, Push to turn
- 3** Vertical, Push to turn
- x** Ask for customized solution

CODING

- 3** BCD (max. 10 pos.)
- 4** BCD compl. (max. 10 pos.)
- x** Ask for customized solution

(Explanation: see chapter technical explanation at the end of the catalog)

BUSHING; IP SEALING; NUT & WASHER

- 10** Threaded; IP60; Hex-Nut & Washer
- 20** Threaded; IP60; Slotted-Nut & Washer
- 30** Threaded; IP68; Hex-Nut & Washer
- 40** Threaded; IP68; Slotted-Nut & Washer
- 50** Threaded; IP60; Without Nut & Washer
- 60** Threaded; IP68; Without Nut & Washer
- XX** Ask for customized solution

PACKAGING

- Standard tray (25/50 pcs.)

TORQUE

- 7** 7 Ncm
- X** Ask for customized solution

D-SHAFT LENGTH (AL)

- 13** Standard, 13 mm length
- 14** Standard, 14 mm length
- 16** Standard, 16 mm length

(for shaft dimension and shape see drawing)

XX Ask for customized solution


SWITCHING MODE

- S** Shorting
- N** Non-shorting

ON-OFF LOCKED COUNTERCLOCKWISE

Adjustable "on-off locked" positions. Start at pos. 0

- 0** Without on-off locked CCW
- S** ¹ Standard; BCD: 10 pos.
- 1** 0-9; 2 pos.
- 2** **0-8; 3 pos.**
- 3** 0-7; 4 pos.
- 4** 0-6; 5 pos.
- 5** 0-5; 6 pos.
- 6** 0-4; 7 pos.
- 7** 0-3; 8 pos.
- 8** 0-2; 9 pos.
- 9** 0-1; 10 pos.




X Ask for customized solution
¹ End-stop between Pos. 0 and Pos. 9

ON-OFF LOCKED CLOCKWISE

Adjustable "on-off locked" positions. Start at pos. 0

- 0** Without on-off locked CW
- S** ¹ Standard; BCD: 10 pos.
- 1** 0-1; 2 pos.
- 2** **0-2; 3 pos.**
- 3** 0-3; 4 pos.
- 4** 0-4; 5 pos.
- 5** 0-5; 6 pos.
- 6** 0-6; 7 pos.
- 7** 0-7; 8 pos.
- 8** 0-8; 9 pos.
- 9** 0-9; 10 pos.

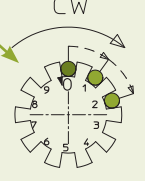


X Ask for customized solution
¹ End-stop between Pos. 0 and Pos. 9

ALL POSITIONS LOCKED CLOCKWISE

Adjustable "all positions locked" positions. Start at pos. 0

- 0** Without all positions locked CW
- S** ¹ Standard; BCD: 10 pos.
- 1** 0-1; 2 pos.
- 2** **0-2; 3 pos.**
- 3** 0-3; 4 pos.
- 4** 0-4; 5 pos.
- 5** 0-5; 6 pos.
- 6** 0-6; 7 pos.
- 7** 0-7; 8 pos.
- 8** 0-8; 9 pos.
- 9** 0-9; 10 pos.

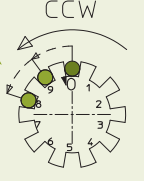


X Ask for customized solution
¹ Fixed stop between Pos. 0 and Pos. 9

ALL POSITIONS LOCKED COUNTERCLOCKWISE

Adjustable "all positions locked" positions. Start at pos. 0

- 0** Without all positions locked CCW
- S** ¹ Standard; BCD: 10 pos.
- 1** 0-9; 2 pos.
- 2** **0-8; 3 pos.**
- 3** 0-7; 4 pos.
- 4** 0-6; 5 pos.
- 5** 0-5; 6 pos.
- 6** 0-4; 7 pos.
- 7** 0-3; 8 pos.
- 8** 0-2; 9 pos.
- 9** 0-1; 10 pos.



X Ask for customized solution
¹ Fixed stop between Pos. 0 and Pos. 9

TECHNICAL EXPLANATIONS

GENERAL SWITCH TERMS

POSITION

A position is a mechanical detent of a switch actuation.

DETENT

A detent is a positioning device to mechanically stop the rotation of a switch. This can be achieved for instance with a spring-operated ball and an opponent chamfer.

POLE

A pole is capable of conducting a single electrical signal. Each layer is equivalent to one pole (1 layer = 1 pole). The number of poles indicates the number of electrical signals/circuits which are controlled by the switch.

WAFER, DECK OR LAYER

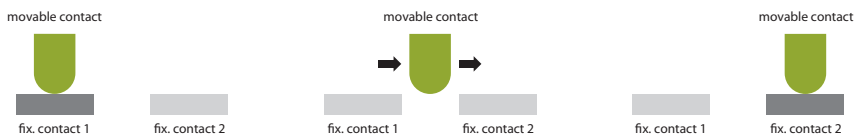
Here, a wafer is a construction of a fixed and a movable disk. One wafer consists of the necessary contacts for one pole.

INDEXING ANGLE

An indexing angle is the number of degrees between each consecutive position.
For example: 12 positions of a total of 360 degrees results in a 30 degrees indexing angle.

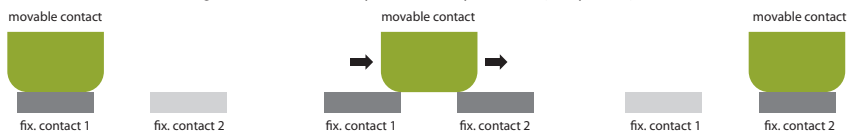
NON-SHORTING CONTACTS "BREAK BEFORE MAKE"

A non-shorting contact is also known as "break-before-make" and describes the switching action of a pole when switching to the next position. The switch will momentarily be interrupted while it changes for instance from position 1 to position 2 (see picture)



SHORTING CONTACTS "MAKE BEFORE BREAK"

A shorting contact is also known as "make-before-break" and describes the switching action of a pole when switching to the next position. The switch will momentarily short two contacts while it changes for instance from position 1 to position 2 (see picture).



CYCLE

A cycle is one rotation through all positions and back to the start position. The rotational life of coded or selector switches are usually specified by cycles.

REVOLUTION

A revolution is a 360 degree rotation through all positions. The rotational life of encoded switches is usually specified by revolutions.

BENEFITS OF GOLD-PLATED CONTACTS

Gold-plated contacts should be used for longer rotational life, in corrosive environment or in case the switch will not be actuated for a long period of time.

ELMA SWITCH TERMS

MECHANICAL CODED SWITCHES (BCD, HEX, GRAY)

A mechanical coded switch usually works with 4 bits (bit values 1,2,4,8). A common contact (C) shorts the circuit. With 4 bits it is possible to achieve 10 to 16 switch positions (depending on the used code, see picture below) with only 5 connection pins. It is a cost effective way to realize a rotary switch. Coded switches need a microcontroller with corresponding software.

CODE TABLES

BCD	BCD Complementary	Hex	Hex Complementary	Gray	
					■ On □ Off
0	0	0	0	0	
1	1	1	1	1	
2	2	2	2	2	
3	3	3	3	3	
4	4	4	4	4	
5	5	5	5	5	
6	6	6	6	6	
7	7	7	7	7	
8	8	8	8	8	
9	9	9	9	9	
A		A	A	A	
B		B	B	B	
C		C	C	C	
D		D	D	D	
E		E	E	E	
F		F	F	F	

CONCENTRIC FUNCTION

A concentric rotary switch has two shafts (inner and outer) and logically two switching-functions packed in just one switch.

SWISS CLICK INDEXING SYSTEM™

The "Swiss click indexing system" is an Elma label, containing switches with a special indexing to ensure nearly consistent torque over life (see picture below). Switches with that feature are specially marked in the catalogue.

