SELECTOR SWITCH TYPE 06

ELMA
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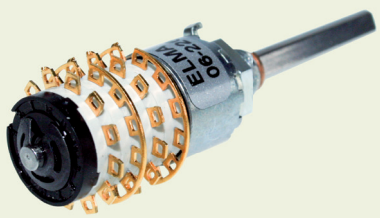
MAIN FEATURES

COMPACT, VERSATILE, MULTI WAFER, UP TO 12 POSITIONS

- 25'000 switching cycles with up to 9 Ncm switching torque
- Gold plated contacts: 3 micron
- Robust metal housing with metal shaft
- Operating temperature range: -40° to +85°C
- Various options and customizations

ELV (2000/53/EC)
RoHS (2002/95/EC)

TYPE 06



PRODUCT VARIETY

- From 1 x 12 to 4 x 3 poles/positions per wafer
- Up to 8 wafers
- Shorting or non-shorting
- Switching torque 3, 6 or 9 Ncm
- Configurable End-Stops
- Shaft length

POSSIBLE CUSTOMIZATIONS

- Shaft dimension and shape
- Bushing dimensions
- Switching torque
- Hollow shaft, inner shaft (see page 96)
- Others

TYPICAL APPLICATIONS

- Industrial controls
- Avionics, instrumentation, test systems
- Medical and audio equipment
- Construction

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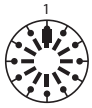
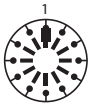
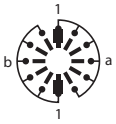
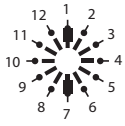
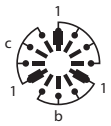
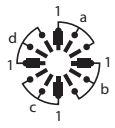
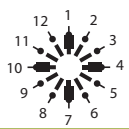
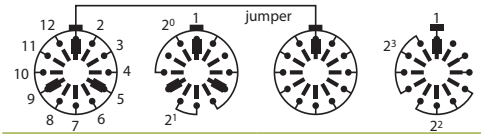
1 PREFERENCE TYPES SELECTION CHART

[1] For other types/options, see type key.

CONTACT ARRANGEMENT		NUMBER OF WAFERS	FUNCTION (POLES X POSITIONS)	STANDARD TYPE KEY	
COMMON CONTACT HALF	DISCRETE CONTACT HALF			SHORTING	NON-SHORTING
		1	1 x 12, endless rotating	06-1103	06-1104
		2	2 x 12, endless rotating	06-2103	06-2104
		3	3 x 12, endless rotating	06-3103	06-3104
		4	4 x 12, endless rotating	06-4103	06-4104
		1	1 x 12	06-1113	06-1114
		2	2 x 12	06-2113	06-2114
		3	3 x 12	06-3113	06-3114
		4	4 x 12	06-4113	06-4114
		1	2 x 6	06-1263	06-1264
		2	4 x 6	06-2263	06-2264
		3	6 x 6	06-3263	06-3264
		4	8 x 6	06-4263	06-4264
		1	3 x 4	06-1343	06-1344
		2	6 x 4	06-2343	06-2344
		3	9 x 4	06-3343	06-3344
		4	12 x 4	06-4343	06-4344
		1	4 x 3	06-1433	06-1434
		2	8 x 3	06-2433	06-2434
		3	12 x 3	06-3433	06-3434
		4	16 x 3	06-4433	06-4434
		2	Binary code 0-11	06-2913	06-2914

STOP SCREWS

Configurable stop screws can be set at any position between 2 and the maximum. Stop screws have to be ordered separately.

	PACKAGING SIZE	ORDER NUMBER
Stop screw M1.2	10 pcs.	4224-11
Stop screw M1.2	100 pcs.	4224-10
Hex nut M7 x 0.75	10 pcs.	4224-16

SPECIFICATIONS

MECHANICAL DATA

Resolution:	12 positions max. (30° indexing)
Switching torque (new condition):	3, 6 or 9 Ncm (+/- 25%), additional wafers may increase switching torque
Rotational life:	25'000 switching cycles min.
Fastening torque of nut:	200 Ncm max.

ELECTRICAL DATA

Function:	From 1 x 12 to 4 x 3 poles/positions per wafer (max. 8 wafers)
Switching mode:	Shorting or non-shorting
Load current:	1.5 A max. (resistive load)
Switching voltage:	42 VDC max.
Contact resistance (new condition):	10 mΩ max.
Insulation resistance:	10^{13} Ω min. (contact to contact / housing)
Switching capacity:	1 pF max. (contact to contact)
Dielectric withstanding voltage:	500 VDC during 60 seconds

MATERIAL DATA

Shaft:	Stainless steel
Bushing/housing:	Zinc diecast, zinc plated and passivated
Nut:	Brass, zinc plated and passivated
Contact plating:	Wafer: Diallylphtalat (DAP), rotor: Polyacetal (POM)
Soldering leads:	Alloy copper, gold plated

ENVIRONMENTAL DATA

Operating/storage temperature range:	-40° to +85°C
IP sealing:	IP60 shaft/front panel sealing
Vibration:	10 G_{rms} max. @ 10 to 2000 Hz
Flammability:	UL94-HB

PACKAGING QUANTITY

Tray:	10 pcs.

SOLDERING CONDITIONS

Hand soldering:	340°C max. during 2 sec max.
Wave soldering:	280°C max. peak temperature during 5 sec max.

SWITCHING MODES

For information about switching modes please see **technical explanations** at the end of the catalog

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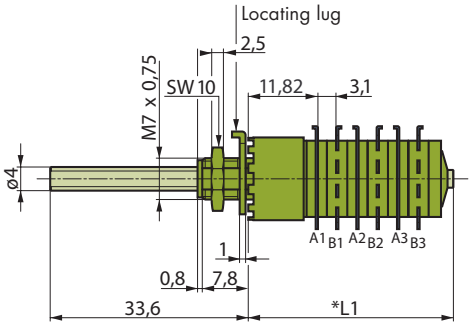
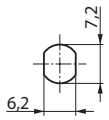
DRAWINGS

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

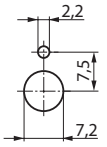
WITH SOLDER EYELETS



FRONT PANEL CUT OUT



without locating lug

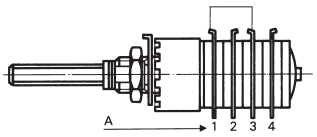


with locating lug

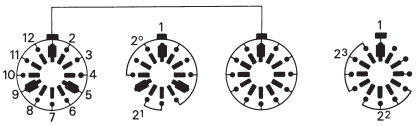
SW - Key spanner
Ax - Common contact half of wafer x
Bx - Discrete contact half of wafer x

*L -	1 wafer	21 mm
	2 wafers	28 mm
	3 wafers	35 mm
	4 wafers	42 mm
	Per additional wafer	+7 mm

SWITCH WITH BCD CODING



jumper



12 positions; the coding will be made according to the layout on the left.

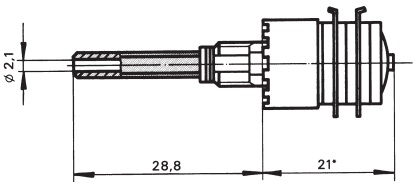
Limiting positions to 10 (BCD) is done with a stop screw M1.2 x 2.5.

BCD Coding

	8	4	2	1
1				
2				■
3			■	
4			■	■
5		■		
6		■		■
7		■	■	
8		■	■	■
9	■			
10	■			■
11	■		■	
12	■		■	■

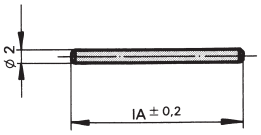
■ On
□ Off

HOLLOW SHAFT SYSTEM (CUSTOMIZED SOLUTION)



HOLLOW SHAFT

Available for switches up to 4 wafers; inner shaft (∅ 2 mm) has to be ordered separately.



INNER SHAFT

For switches with mounting plate or hollow shaft. Hollow shaft must be ordered separately.

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TYPE KEY

06	-	_	_	_	_	-	_	_	_	_	_

STANDARD TYPE KEY

(see page 94)

NUMBER OF WAFERS

(max. 8)
> 8 on request

NUMBER OF POLES

Number of poles per wafer

FACTORY SET CHARACTER

Defined by Elma
(See page 94, is composed of switching mode, poles and positions)

SWITCHING MODE

3 Shorting
4 Non-shorting

TORQUE

- 6 Ncm
M 3 Ncm
N 9 Ncm

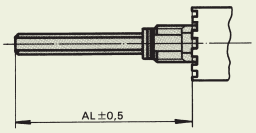
FACTORY SET END-STOP

00 12 pos. (standard)
11 11 pos.
10 10 pos.
09 09 pos.
08 08 pos.
07 07 pos.
06 06 pos.
05 05 pos.
04 04 pos.
03 03 pos.
02 02 pos.

SHAFT LENGTH (AL)

000 33.6 mm
[1] xxx Custom
(e.g. 18.5 mm = 185)

[1] Customized shaft length
Shaft length (AL) description measured from mounting face (see picture below).



Max. shaft length (AL): 33.6 mm

TECHNICAL EXPLANATIONS

GENERAL SWITCH KNOWLEDGE

POSITION

A position is the mechanical detent of a switch actuator.

DETENT

A detent is a mechanical positioning device for stopping actuator travel at each successive electrical circuit; for example, a spring-operated ball and groove.

POLE

A pole is a single common electrical input having one or more outputs.

WAFER, DECK OR LAYER

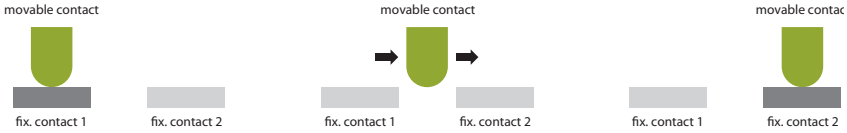
A wafer/deck or layer is a section what the contacts are mounted on.

INDEXING ANGLE

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

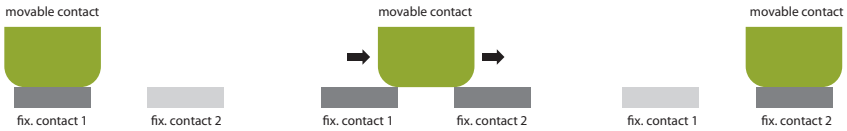
NON-SHORTING CONTACTS "BREAK BEFORE MAKE"

A non-shorting contact is also known as “break before make” and describes the action of one circuit of a pole before interrupting another of the same pole.
The switch will be momentarily interrupted before it changes from position 1 to position 2 during actuation (see picture).



SHORTING CONTACTS "MAKE BEFORE BREAK"

A shorting contact is also known as “make before break” and describes the action of one circuit of a pole before interrupting another of the same pole.
The switch will momentarily “short” position 1 and 2 during actuation (see picture).



CYCLE

A cycle is the complete sequence of indexing through all successive switch positions and returning to the original position.
The rotational life from coded or selector switches are usually specified with cycles.

REVOLUTION

A revolution is the complete sequence of indexing through all successive switch positions in the same direction.
The rotational life from encoded switches are usually specified with revolutions.

WHEN YOU SHOULD USE GOLD-PLATED CONTACTS

Gold plated contacts should be used for longer rotational life and if the switch will not be actuated for a long period of time after installation or in corrosive environmental conditions.