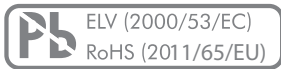


MAIN FEATURES

VERY ROBUST, MULTI WAFER, UP TO 24 POSITIONS

- 25'000 switching cycles with up to 20 Ncm switching torque
- Gold plated contacts: 3 micron
- Optional IP68 front panel sealing
- Operating temperature range: -40° to +85°C
- Various options and customizations

**PRODUCT VARIETY**

- Soldering eyelets or pins for PCB
- From 1 x 24 to 6 x 3 poles x positions per wafer
- Up to 8 wafers
- Indexing angle 15° or 30°
- Shorting or non-shorting
- Switching torque 1.5, 8, 15 or 20 Ncm
- Front panel sealing IP60 or IP68
- Configurable end-stops
- Shaft diameter: 6 mm or ¼"
- Shaft length

TYPE 04**POSSIBLE CUSTOMIZATIONS**

- Shaft dimension and shape
- Bushing dimensions
- Switching torque
- Momentary contact (see page 94)
- Hollow shaft, inner shaft (see page 95)
- Others

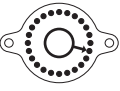

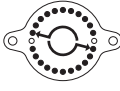
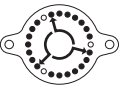
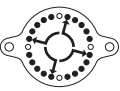
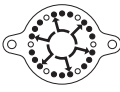
TYPICAL APPLICATIONS

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

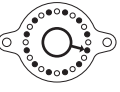
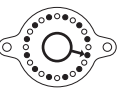
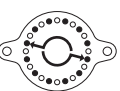
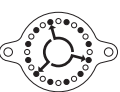
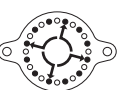
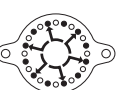
1 PREFERENCE TYPES SELECTION CHART

1 For other types/opions, see type key.

INDEXING ANGLE 15°, SHORTING (ONLY)

CONTACT ARRANGEMENT	NUMBER OF WAFERS	FUNCTION (POLES X POSITIONS)	PART NUMBER	
			WITH SOLDER EYELETS	WITH PINS FOR PCB
	1—H	1 x 24, endless rotating	04-1103	04-1103-20
	2—HH	2 x 24, endless rotating	04-2103	-
	3—HHH	3 x 24, endless rotating	04-3103	-
	4—HHHH	4 x 24, endless rotating	04-4103	-
	1—H	1 x 24	04-1133	04-1133-20
	2—HH	2 x 24	04-2133	-
	3—HHH	3 x 24	04-3133	-
	4—HHHH	4 x 24	04-4133	-
	1—H	2 x 11	04-1213	04-1213-20
	2—HH	4 x 11	04-2213	-
	3—HHH	6 x 11	04-3213	-
	4—HHHH	8 x 11	04-4213	-
	1—H	3 x 7	04-1373	04-1373-20
	2—HH	6 x 7	04-2373	-
	3—HHH	9 x 7	04-3373	-
	4—HHHH	12 x 7	04-4373	-
	1—H	4 x 5	04-1453	04-1453-20
	2—HH	8 x 5	04-2453	-
	3—HHH	12 x 5	04-3453	-
	4—HHHH	16 x 5	04-4453	-
	1—H	6 x 3	04-1633	04-1633-20
	2—HH	12 x 3	04-2633	-
	3—HHH	18 x 3	04-3633	-
	4—HHHH	24 x 3	04-4633	-

INDEXING ANGLE 30°, NON-SHORTING (SHORTING ON REQUEST)

CONTACT ARRANGEMENT	NUMBER OF WAFERS	FUNCTION (POLES X POSITIONS)	PART NUMBER	
			WITH SOLDER EYELETS	WITH PINS FOR PCB
	1—H	1 x 12, endless rotating	04-1104	04-1104-20
	2—HH	2 x 12, endless rotating	04-2104	-
	3—HHH	3 x 12, endless rotating	04-3104	-
	4—HHHH	4 x 12, endless rotating	04-4104	-
	1—H	1 x 12	04-1124	04-1124-20
	2—HH	2 x 12	04-2124	-
	3—HHH	3 x 12	04-3124	-
	4—HHHH	4 x 12	04-4124	-
	1—H	2 x 6	04-1264	04-1264-20
	2—HH	4 x 6	04-2264	-
	3—HHH	6 x 6	04-3264	-
	4—HHHH	8 x 6	04-4264	-
	1—H	3 x 4	04-1344	04-1344-20
	2—HH	6 x 4	04-2344	-
	3—HHH	9 x 4	04-3344	-
	4—HHHH	12 x 4	04-4344	-
	1—H	4 x 3	04-1434	04-1434-20
	2—HH	8 x 3	04-2434	-
	3—HHH	12 x 3	04-3434	-
	4—HHHH	16 x 3	04-4434	-
	1—H	6 x 2	04-1624	04-1624-20
	2—HH	12 x 2	04-2624	-
	3—HHH	18 x 2	04-3624	-
	4—HHHH	24 x 2	04-4624	-

STOP SCREWS AND BUSHING NUT

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

	PACKAGING SIZE	PART NUMBER
Stop screw M1.4	10 pcs.	4124-21
Stop screw M1.4	100 pcs.	4124-20
Hex nut M10 x 0.75	10 pcs.	4124-41

SPECIFICATIONS

MECHANICAL DATA

Resolution:	24 positions max. (15° indexing); shorting 12 positions max. (30° indexing); non-shorting
Switching torque (new condition):	1.5, 8, 15 or 20 Ncm (+/- 25%), additional wafers may increase switching torque
Rotational life:	25'000 switching cycles min.
End-stop strenght:	300 Ncm 100 Ncm for factory end-stops
Fastening torque of nut:	300 Ncm max.

ELECTRICAL DATA

Function:	From 1 x 24 to 6 x 3 poles / positions per wafer (max. 8 wafers; >8 wafers are available on request)
Switching mode:	Shorting (for 15° indexing) Non-shorting (for 30° indexing)
Load current:	2 A max. (resistive load)
Switching voltage:	42 VDC max.
Contact resistance (new condition):	10 mΩ max.
Insulation resistance (new condition):	10 ¹² 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:	Gold; 3 μm
Insulation material:	Wafer: HF ceramic, rotor: Polybutylene (PB)
Soldering leads:	Alloy copper, gold plated

ENVIRONMENTAL DATA

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

PACKAGING QUANTITY

Tray:	10 pcs.
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SOLDERING CONDITIONS

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

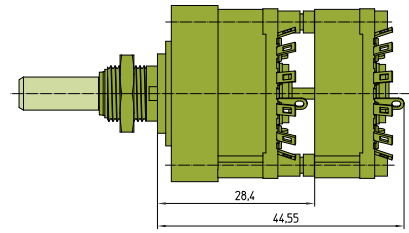
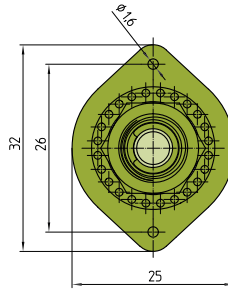
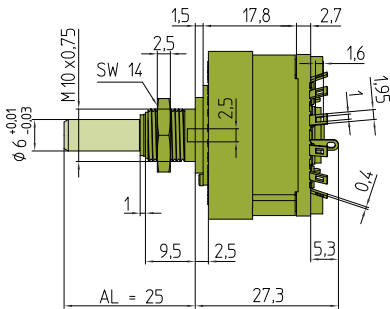
SWITCHING MODES

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

DRAWINGS

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

WITH SOLDER EYELETS

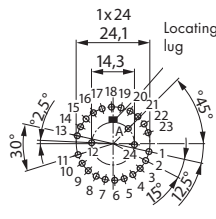
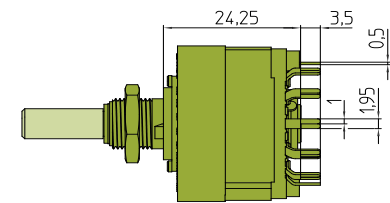


SW = key spanner

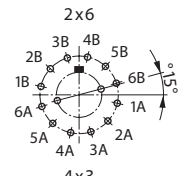
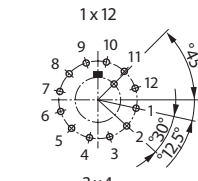
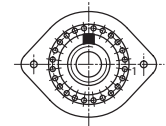
WITH PINS FOR PCB MOUNTING

DRILLING DIAGRAM FOR 15° INDEXING ANGLE

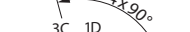
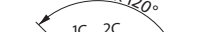
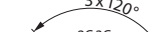
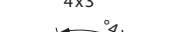
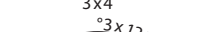
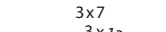
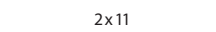
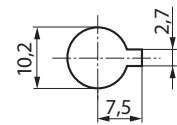
DRILLING DIAGRAM FOR 30° INDEXING ANGLE



View from the shaft end



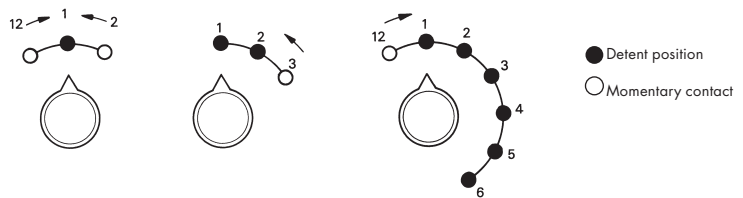
FRONT PANEL CUT OUT



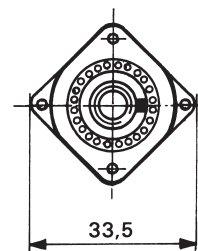
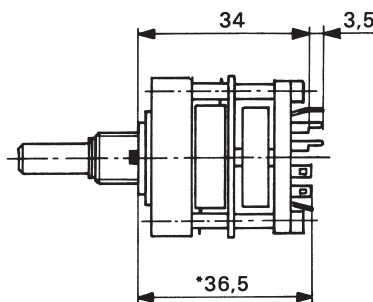
○ = $\phi 1,3\text{mm}$
● = $\phi 2,3\text{mm}$

SWITCH WITH MOMENTARY CONTACT (CUSTOMIZED SOLUTION)

EXAMPLES

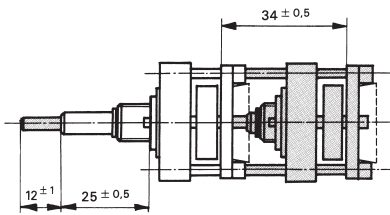
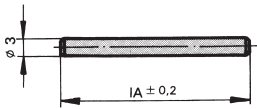
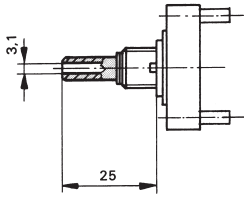


DIMENSIONS



*17.5 mm extra per wafer

HOLLOW SHAFT SYSTEM (CUSTOMIZED SOLUTION)



HOLLOW SHAFT

Available for switches up to 5 wafers; inner shaft (∅ 3 mm) to be ordered separately.

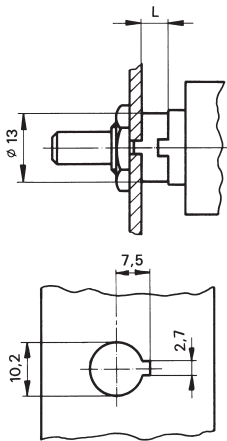
INNER SHAFT

For switches with mounting plate or hollow shaft; hollow shaft has to be ordered separately. Please state exact length.

SWITCHES WITH CONCENTRIC SHAFTS

Consisting of a hollow outer and inner shaft. The inner shaft driving a maximum of 3 wafers with 6 wipers each. Please give type description of each switch.

SPACERS



Spacers can be used in many cases instead of shortened bushes; made of glass-fibre reinforced plastic to compensate the front panel thickness; available in two standard lengths.

LENGTH L	PACKAGING UNIT	PART NUMBER
3.5 mm	10 pcs.	4124-31
3.5 mm	100 pcs.	4124-30
5.5 mm	10 pcs.	4124-36
5.5 mm	100 pcs.	4124-35

TYPE KEY



PART NUMBER
(see page 92)

WAFER TYPE
- HF ceramic

NUMBER OF WAFERS
(max. 8)
> 8 on request

NUMBER OF POLES
Number of Poles per Wafer

FACTORY SET CHARACTER
Defined by Elma
(See page 92, is composed of switching mode, poles and positions)

SWITCHING MODE
3 Shorting
4 Non-shorting (not for 15° index. angle)

TORQUE
- 15 Ncm (standard)
M 8 Ncm
N 20 Ncm
R 1.5 Ncm

SHAFT DIAMETER
0 6 mm (standard)
Z ¼"

FACTORY SET END-STOP

00	24 pos. (standard)
23	23 pos.
22	22 pos.
21	21 pos.
20	20 pos.
19	19 pos.
18	18 pos.
17	17 pos.
16	16 pos.
15	15 pos.
14	14 pos.
13	13 pos.
12	12 pos.
11	11 pos.
10	10 pos.
09	9 pos.
08	8 pos.
07	7 pos.
06	6 pos.
05	5 pos.
04	4 pos.
03	3 pos.
02	2 pos.

SHAFT LENGTH (AL)

000 25 mm (standard)
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):
Ø ¼" = 25 mm
Ø 6 mm = 50 mm

PIN STYLE; IP SEALING

00	Eyelets, IP60
20	Pins for PCB, IP60
30	Eyelets; IP68
70	Pins for PCB; IP68