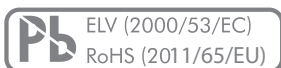


Product description

MAIN FEATURES

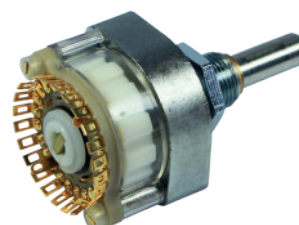
VERY ROBUST, MULTI WAFER,
UP TO 24 POSITIONS

- > 25'000 switching cycles with up to 20 Ncm switching torque
- > Gold plated contacts: 3 micron
- > 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
- Detent 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 1/4"
- Shaft length

04

POSSIBLE CUSTOMIZATIONS

- Shaft dimension and shape
- Bushing dimensions
- Switching torque
- Hollow shaft, inner shaft
- Others

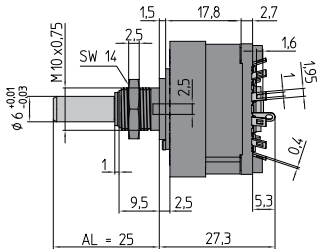
TYPICAL APPLICATIONS

- Industrial controls
- Avionics, instrumentation, test systems
- Medical and audio equipment
- Transport and construction machinery

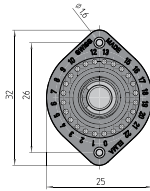
Dimensions and pin assignment

SWITCH DESIGN

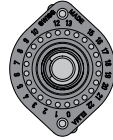
WITH SOLDERING EYELETS



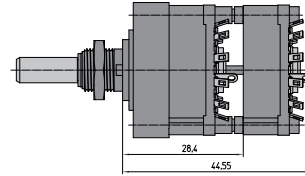
SW = key spanner



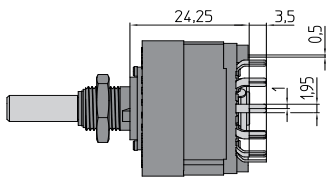
IP60 version
(with locating lug)



IP68 version
(without locating lug)



WITH PINS FOR PCB MOUNTING

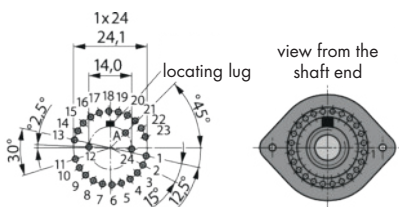


Dimensions in mm
Tolerances according to DIN ISO 2768-1 (m), unless otherwise specified

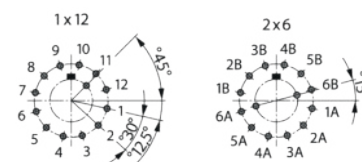
Dimensions and pin assignment

PIN ASSIGNMENT AND DRILLING DIAGRAM

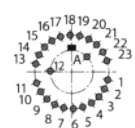
15° DETENT ANGLE



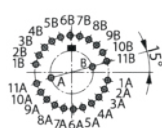
30° DETENT ANGLE



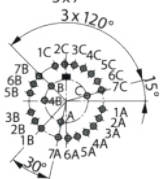
1x23



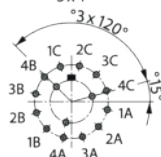
2x11



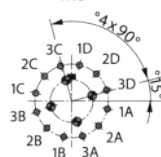
3x7



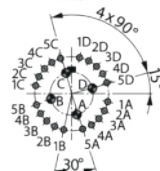
3x4



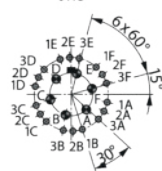
4x3



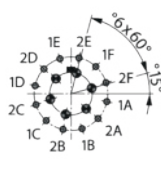
4x5



6x3



6x2

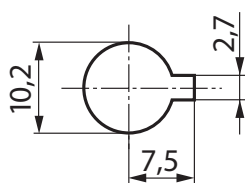


● = $\varnothing 1,3$ mm
● = $\varnothing 2,3$ mm

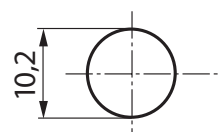
● = $\varnothing 1,3$ mm
● = $\varnothing 2,3$ mm

FRONT PANEL CUT OUT

IP60 VERSION (WITH LOCATING LUG)

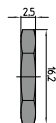


IP68 VERSION (WITHOUT LOCATION LUG)



NUT

HEX NUT (SUPPLIED) SHAFT $\varnothing 6$ MM



Screw wrench
14 mm 10 x 0.75

Dimensions in mm
Tolerances according to DIN ISO 2768-1 (m), unless otherwise specified

Ordering information

ORDERING CODE

04	-	-	-	-	-	-	-	-	-	-	-	-	-
----	---	---	---	---	---	---	---	---	---	---	---	---	---

BASIC CODE
See standard types

NUMBER OF WAFERS
See standard types

NUMBER OF POLES
See standard types

FACTORY SET CHARACTER
See standard types

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

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

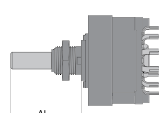
SHAFT DIAMETER
0 6 mm
Z 1/4" (6.35 mm)

NUMBER OF POSITIONS
00 Standard
23 23 positions
22 22 positions
21 21 positions
20 20 positions
19 19 positions
18 18 positions
17 17 positions
16 16 positions
15 15 positions
14 14 positions
13 13 positions
12 12 positions
11 11 positions
10 10 positions
09 9 positions
08 8 positions
07 7 positions
06 6 positions
05 5 positions
04 4 positions
03 3 positions
02 2 positions

SHAFT LENGTH (AL)
000 25 mm
xxx¹ customized
 (shaft length rounded to next 0.5 mm, e.g. 10.3 mm = 10.5 mm or 10 mm)

¹ Customized shaft length (AL)
 AL measured from mounting face (see picture below)

Max. shaft length (AL):
 Ø 1/4" = 25 mm
 Ø 6 mm = 50 mm

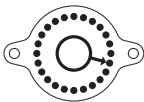
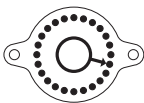


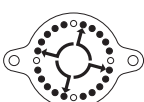
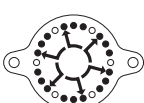


PIN STYLE | IP-SEALING
00 Soldering eyelets | IP60
20 Pins for PCB | IP60
30 Soldering eyelets | IP68
70 Pins for PCB | IP68

Ordering information

STANDARD TYPES¹

DETENT ANGLE 15°, SHORTING (NON-SHORTING NOT AVAILABLE)

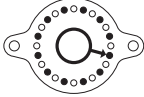
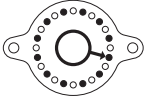
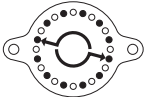
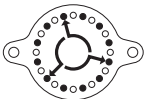
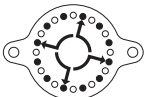
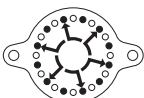
CONTACT ARRANGEMENT	NUMBER OF WAFERS	FUNCTION (POLES X POSITIONS)	PART NUMBER	
			WITH SOLDER EYELETS	WITH PINS FOR PCB
	1—H	1 x 24 endless rotating	04-1103	04-1103-20
	2—HH	2 x 24 endless rotating	04-2103	—
	3—HHH	3 x 24 endless rotating	04-3103	—
	4—HHHH	4 x 24 endless rotating	04-4103	—
	1—H	1 x 24	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	—

¹ For other types | options see ordering code

Ordering information

STANDARD TYPES¹

DETENT 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	—

¹ For other types | options see ordering code

Ordering information

PACKAGING

Foam polystyrene box:	10 pieces
-----------------------	-----------

ACCESSORIES AND SPARE PARTS

Hex nut M10 x 0.75:

Part number 4124-21 (10 pieces / bag), brass, galvanized and passivated

Stop screw M1.4:

Part number 4124-21 (10 pieces / bag), steel

Part number 4124-20 (100 pieces / bag), steel

Spacer:

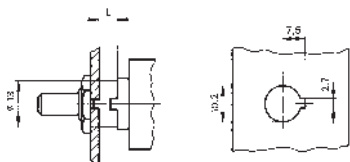
Spacers can be used in many cases instead of shortened bushes; made of glass-fibre reinforced plastic to compensate the front panel thickness; available in two standard lengths. Can not be used for IP68 versions.

Part number 4124-31 (10 pieces / bag), 3.5 mm length (L)

Part number 4124-30 (100 pieces / bag), 3.5 mm length (L)

Part number 4124-36 (10 pieces / bag), 5.5 mm length (L)

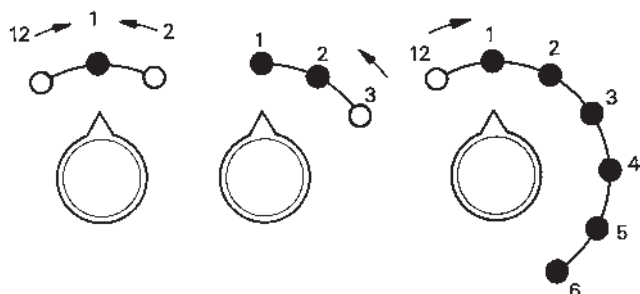
Part number 4124-35 (100 pieces / bag), 5.5 mm length (L)



Customized solutions

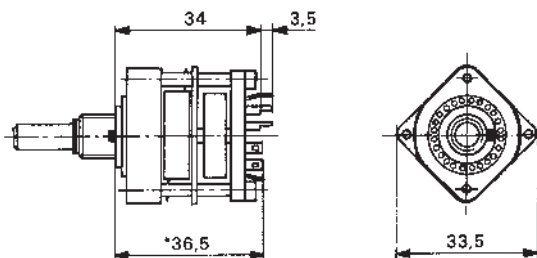
SWITCH WITH MOMENTARY CONTACT

EXAMPLES



● Detent position
○ Momentary contact

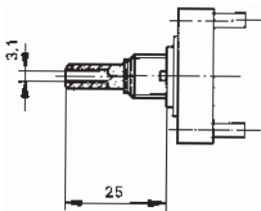
DIMENSIONS



*17.5 mm extra per wafer

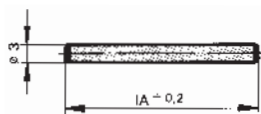
HOLLOW SHAFT SYSTEM

HOLLOW SHAFT



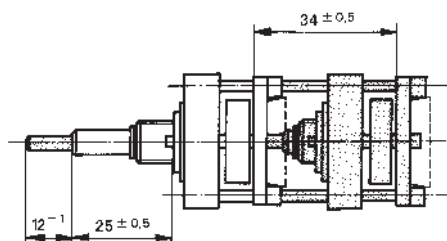
Available for switches up to 5 wafers.
Inner shaft (Ø 3 mm) must be ordered separately.

INNER SHAFT



For switches with mounting plate or hollow shaft.
Hollow shaft must 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 max. of 3 wafers with 6 wipers each.
Please give type description of each switch.

Specifications

MECHANICAL DATA

Detent angle positions:	15° detent angle 24 positions 30° detent angle 12 positions
Rotary limitation end stop:	Configurable
Switching torque:	1.5, 8, 15 or 20 Ncm ($\pm 25\%$ in new condition)
Rotational life:	> 25'000 cycles (tested at room temperature)
Rotational stop strength:	> 250 Ncm
Fastening torque of nut (front panel mounting):	M10 x 0.75: < 300 Ncm

ELECTRICAL DATA

Electrical connection:	Soldering eyelets Pins for PCB
Switching voltage:	< 42 VDC (resistive load)
Switching current:	< 2'000 mA (resistive load)
Contact resistance:	< 10 m Ω (in new condition)
Switching capacity:	< 1 pF (between the contacts)
Switching function:	1 x 24 to 6 x 3 poles x positions per wafer, max. 8 wafers
Switching mode:	Shorting (for 15° and 30° detent angle) Non-shorting (for 30° detent angle)
Dielectric strength:	500 VDC during 60 s (pin-to-pin, pin-to-housing)
Insulation resistance:	> 1 G Ω at 500 VDC (pin-to-pin, pin-to-housing, in new condition)

MATERIALS

Shaft:	Stainless steel 1.4305
Bushing housing:	Zinc die casting (zinc plated and passivated)
Contact surface:	Cu alloy (Au plated)
Insulation material:	Wafer: PEAK or ceramic Rotor: Polybutylen (PB)
Soldering leads:	Cu alloy (Au plated)
Hex nut:	Brass (zinc plated and passivated)

ENVIRONMENTAL DATA

Operating temperature:	-40 to +85 °C (IEC 60068-2-14)
Storage temperature:	-40 to +85 °C (IEC 60068-2-14)
IP sealing against front panel:	IP60 without sealing IP68 with shaft and front panel sealing (2 bar, 1 h)
Vibration:	10 G _{RMS} at 10 to 2'000 Hz
Flammability:	UL94-HB

SOLDERING CONDITIONS

Hand soldering:	< 340 °C during 2 s
Wave soldering:	< 280 °C during 5 s

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