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ELMA Your Solution Partner

Product Presentation Rotary Switches

Elma Electronic AG

03|2019

Rotary switches overview

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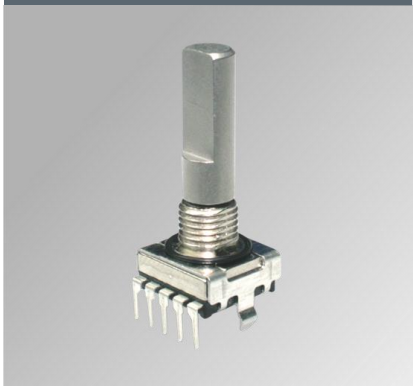
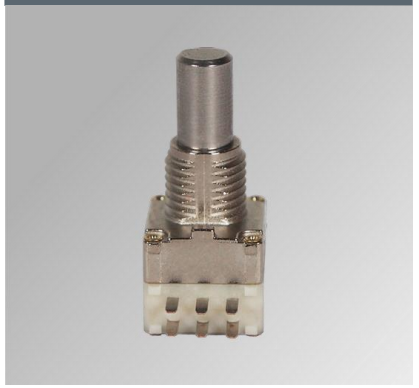
Encoder



Coded switches

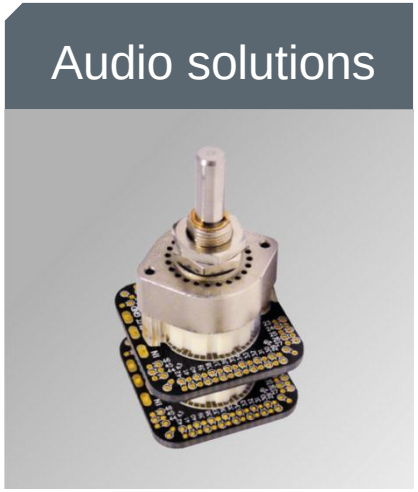


Hall-Sensor

Rotary switches

Selector switches

Audio solutions



Knobs

Encoder

Main features

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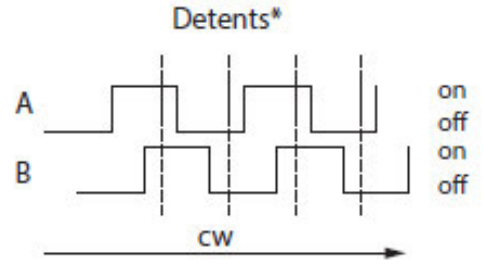
- Incremental output signal
- Life time up to 1 Million revolutions
- No detent and various detent torque up to 4.5 Ncm
- No detent torque reduction over life time
- Push button with up to 14 N push force
- IP68 shaft and front panel sealing
- Gold plated contacts
- Operating temperature -40 to +85 °C
- Hand, wave or reflow soldering possible



* Timing diagram shows 32 detents / 16 PPR or 16 detents / 8 PPR.

Highly reliable incremental encoder

- Body size 11.5 x 12.3 x 4.9 mm
- Major variety of Ø 6 mm shafts in stainless steel (1.4305) and brass
- Various custom shafts available and possible
- Life time up to 1 Million revolutions
- No detent and various detent torque up to 4.5 Ncm
- No detent torque reduction over life time
- Push button with up to 14 N push force
- IP68 shaft and front panel sealing
- Operating temperature -40 to +85 °C
- Horizontal or vertical mounting (THT and SMT)
- Hand, wave or reflow soldering possible

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E33 with integrated PCB (with and without debouncing)

- For all E33 types with SMT vertical housing
- With and without debounce circuit
- Various options and customization possible
- Easy assembly and integration of the turnkey solution

E33 with PCB

E33 with debouncing on PCB

E33 with debouncing and Micro-MaTch socket on PCB

E33 with debouncing and FFC connector on PCB

E33

Encoder (debouncing function)

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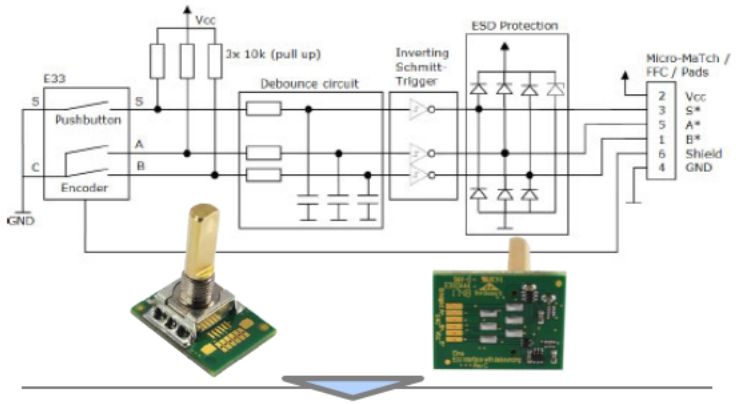
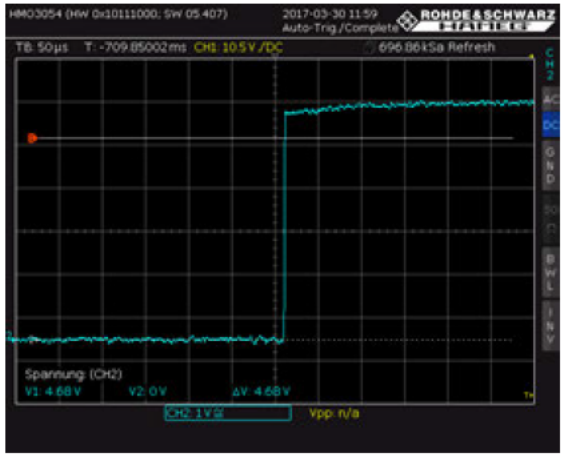
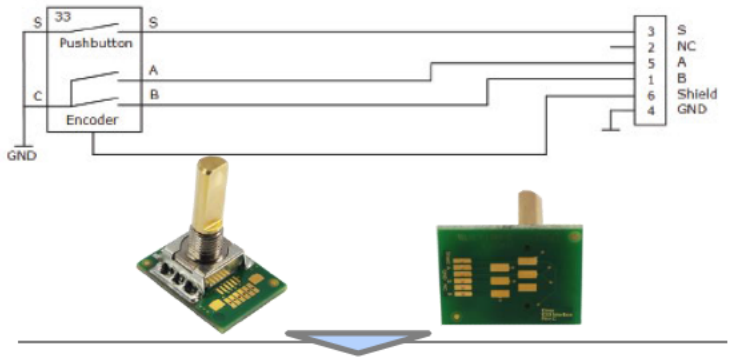
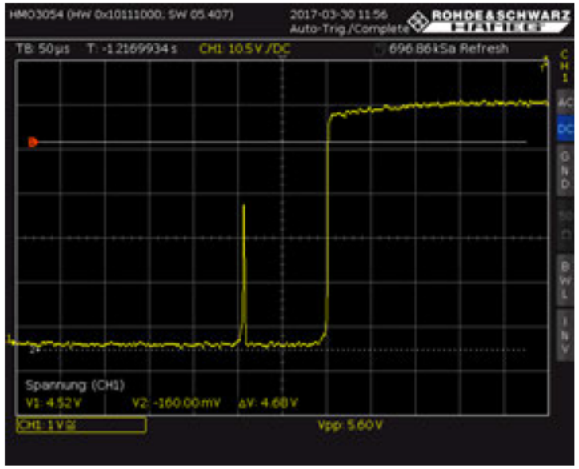
Output signal example with debounce circuit





Output signal example without debounce circuit





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Highly reliable encoder with two shafts

- Body size 13.5 x 13.85 x 9.8 mm
- Outer shaft: Ø 6 mm (brass) / Inner shaft: Ø 4 mm (stainless steel)
  - Stainless steel (1.4305) on both shafts possible
- Life time up to 1 Million revolutions
- No detent and various detent torque up to 4.5 Ncm on both shafts
- No detent torque reduction over life time
- Push button with up to 14 N push force
- IP68 shaft and front panel sealing
- Gold plated contacts
- Operating temperature -40 to +85 °C
- Horizontal or vertical mounting (THT)
- Hand, wave or reflow soldering possible

Coded switches

Main features

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- Absolute BCD, HEX or GRAY coding outputs (see code tables below)
- Rotational life 10’000 – 15’000 cycles
- Stainless steel shaft
- Designed for harsh environment
- IP68 shaft and front panel sealing
- Operating temperature -40 to +85 °C
- Hand, wave or reflow soldering possible

Code Tabelle

BCD

	8	4	2	1
0				
1				■
2			■	
3			■	■
4		■		
5		■		■
6		■	■	
7		■	■	■
8	■			
9	■			■

Hex

	8	4	2	1
0				
1				■
2			■	
3			■	■
4		■		
5		■		■
6		■	■	
7		■	■	■
8	■			
9	■			■
A	■		■	
B	■		■	■
C	■	■		
D	■	■		■
E	■	■	■	
F	■	■	■	■

Gray

	8	4	2	1
0				
1				■
2			■	■
3			■	
4		■	■	
5		■	■	■
6		■		■
7		■		
8	■	■		
9	■	■		■
A	■	■	■	■
B	■	■	■	
C	■		■	
D	■		■	■
E	■			■
F	■			

On
Off

07 & C07A

Coded switch

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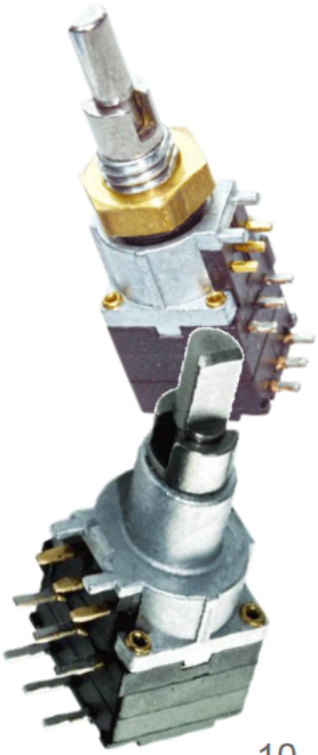
Compact switch with absolute output coding

- Body size 10.5 x 10.2 x 10.4 mm (14.5 mm with threaded bushing)
- Stainless steel (1.4305) shaft with Ø 3 mm or Ø 1/8”
- Rotational life 10’000 cycles
- BCD, HEX or GRAY code
- 10 or 16 positions (with or w/o end stop)
- 3.2 or 3.5 Ncm torque
- Shorting or non-shorting switching mode
- IP60 and IP68 shaft sealing
- Operating temperature -40 to +85 °C
- Horizontal or vertical mounting (THT with shaft or screwdriver)
- Hand and wave soldering possible

Concentric switch with two shafts

- Body size 10.5 x 10.2 x 13.5 mm (14.1 mm with threaded bushing)
- Stainless steel (1.4305) shaft with Ø 1/8” (Ø 3.2 mm)
- Rotational life min: Inner shaft 10’000 cycles / Outer shaft: 7’000 cycles
- Resolution 22.5°: Inner shaft 16 positions /
  Outer shaft: 2 or 3 positions
- Coding:
  - Inner shaft: HEX or GRAY code
  - Outer shaft: on / off / on (3 pos.) or on / off (2 pos.)
- Torque: Inner shaft 3.5 Ncm / Outer shaft: 5 Ncm
- Shorting switching mode
- IP68 only with threaded bushing
- Operating temperature -40 to +85 °C
- Horizontal mounting (THT)
- Hand and wave soldering possible



M07

Coded switch

Rugged coded switch for harsh application environment

- Body size 10.5 x 10.2 x 12.3 mm
- Stainless steel (1.4305) shaft with Ø 6 mm
- Rotational life 10’000 cycles
- BCD, HEX or GRAY code
- Torque
  - BCD: 2.2 or 4 Ncm
  - HEX and GRAY: 3.2 or 4.5 Ncm
- 10 or 16 positions (with or without end stop)
- Shorting or non-shorting switching mode
- IP60 and IP68 shaft / front panel sealing
- Operating temperature -40 to +85 °C
- Horizontal or vertical mounting (THT)
- Hand and wave soldering possible

07PL

Coded switch

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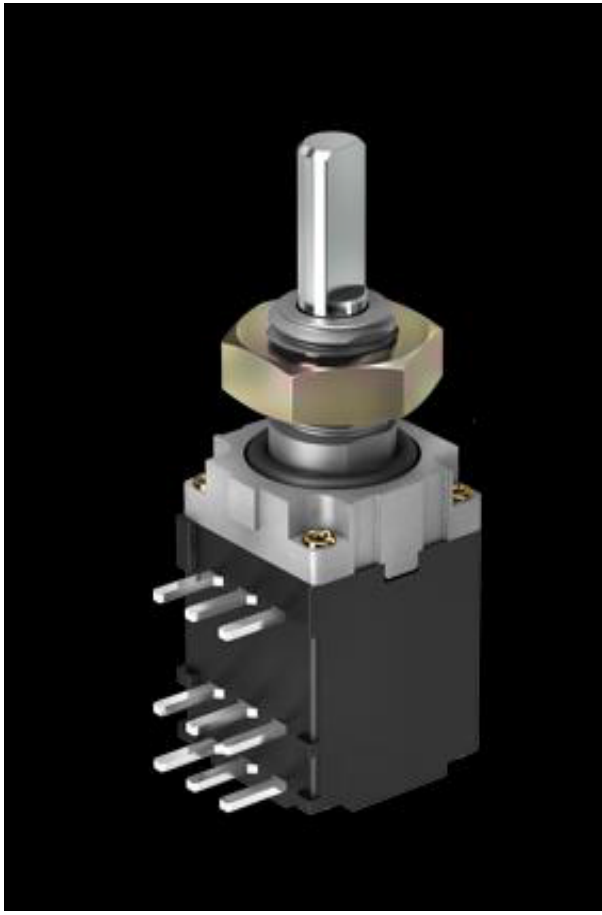
Push button function up to 14 N push force with

- Body size 10.5 x 10.2 x 13.7 mm
- Stainless steel (1.4305) shaft with Ø 6 mm
- Rotational life 10’000 cycles
- BCD, HEX or GRAY code
- 10 or 16 positions (with or without end stop)
- 2.2 or 3.5 Ncm torque
- 3, 5, 10 and 14 N push force
- Shorting or non-shorting switching mode
- IP60 and IP68 shaft / front panel sealing
- Operating temperature -40 to +85 °C
- Horizontal mounting (THT)
- Hand and wave soldering possible



07ML

Coded switch

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Multi layer high detent torque switch

- Body size 10.5 x 10.2 x 21.4 mm
- Stainless steel (1.4305) shaft with Ø 1/8” (Ø 3.2 mm)
- Rotational life 10’000 cycles
- BCD, HEX or GRAY code
- 2.2 or 3.5 Ncm detent torque
- Detent torque depends on layers
  (e.g. layer 1 + 2 with each 1.5 Ncm: Total 3 Ncm torque)
  - BCD coding: 1.5, 2.2 or 4 Ncm
  - HEX and GRAY: 1.5, 3.2 or 4.5 Ncm
- 10 or 16 positions (with or without end stop)
- Shorting or non-shorting switching mode
- IP60 and IP68 shaft / front panel sealing
- Operating temperature -40 to +85 °C
- Horizontal mounting (THT)

07P2T

Coded switch

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Push to Turn function with BCD absolute coding

- Body size 12.8 x 12.8 x 19.5 mm
- Stainless steel (1.4305) shaft with Ø 1/8” (Ø 3.2 mm)
- Rotational life 10’000 cycles
- BCD code
- 7 Ncm torque
- 10 positions with end stop
- Shorting or non-shorting switching mode
- IP60 and IP68 shaft / front panel sealing
- Operating temperature -40 to +85 °C
- Horizontal mounting (THT)
- Hand and wave soldering possible

C15

Coded switch

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Small coded switch for handheld radio and mobile communication applications

- Body size 9.35 x 7.7 x 11.1 mm
- Stainless steel (1.4305) shaft with Ø 3/16” (Ø 4.75 mm)
- Rotational life 15’000 cycles
- GRAY code
- 16 positions (20° detent angle with or 22.5° detent angle without end stop)
- 2.5 or 3 Ncm torque
- Shorting switching mode
- IP65 shaft sealing
- Operating temperature -30 to +60 °C
- Horizontal mounting (THT)
- Hand, wave or reflow soldering possible

C16

Coded switch

Small coded switch for handheld radio and mobile communication applications

- Body size 11 x 10 x 9.15 mm
- Stainless steel (1.4305) shaft with Ø 3/16” (Ø 4.75 mm)
- Rotational life 15’000 cycles
- GRAY code
- 16 positions (20° detent angle with or 22.5° detent angle without end stop)
- 3 Ncm torque
- Shorting switching mode
- IP67 shaft sealing
- Operating temperature -40 to +85 °C
- Horizontal mounting (THT)
- Hand, wave or reflow soldering possible

Multi rotary switches

Main features

- Incremental or absolute coding outputs possible
- Stainless steel shaft
- Designed for harsh environment
- Qualified by MIL-STD-202G
- IP68 shaft and front panel sealing
- Operating temperature -40 to +85 °C
- Hand, wave or reflow soldering possible

X4

Multi rotary switch

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Hall-Sensor switch with ability for various electronic connections

- Body size 32 x 25 x 17.8 mm
- Stainless steel (1.4305) shaft with Ø 6 mm
- Qualified by MIL-STD-202G and MIL-STD-810F
- Rotational life up to 1 Million cycles
- 12, 24 or 48 positions (with end stop)
  - 48 positions: 1.5, 2.5 or 5 Ncm detent torque
  - 12 / 48 positions: 1.5, 4, 8, 15 or 20 Ncm detent torque
- 7 or 14 N push force
- 2.85 to 5.25 VDC operating voltage
- Absolute GRAY, incremental encoder coding (other pc
- Analog, PWM, parallel and UART output available
- Digital output with FFC connector or Micro-Match soc
- IP60 and IP68 shaft / front panel sealing

MR50

Multi rotary switch

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Small robust rotary selector switch

- Body size Ø 1/2” (12.7 mm) x 10.5 mm
- Stainless steel (1.4305) shaft with Ø 1/8” (Ø 3.18 mm)
- Qualified by MIL-STD-202G
- Rotational life up to 20’000 cycles
- 3 or 6 Ncm detent torque
- 10, 12 or 16 positions (with end stop)
  - reduction of positions available
- Shorting or non-shorting switching mode
- IP60 and IP68 shaft / front panel sealing
- Operating temperature -45 to +85 °C
- Hand and wave soldering possible

Selector rotary switches

Main features

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- Very robust design for harsh environments
- High detent torque up to 20 Ncm
- Stainless steel shaft
- IP68 shaft and front panel sealing
- Operating temperature -40 to +85 °C
- Hand and wave soldering possible

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Compact selector up to 12 positions

- Body size Ø 18 mm x 11.5 mm
- Stainless steel (1.4305) shaft with Ø 3, 4 and 6 mm (hollow shaft Ø 6 mm available)
- Rotational life up to 25’000 cycles
- 2, 4 or 6 Ncm torque
- 6, 10 or 12 positions with or without end stop (reduction of positions available)
- Switching mode 6 positions: Non-shorting |
  10 positions: Shorting |
  12 positions: Shorting and non-shorting
- IP60 and IP68 shaft / front panel sealing
- Mounting with pins for PCB or eyelets
- Operating temperature -40 to +85 °C
- Hand and wave soldering possible

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Very robust, multi wafer selector with up to 24 positions

- Body size 32 x 25 x 22.8 mm
- Stainless steel (1.4305) shaft with Ø 6 mm and 1/4“ (hollow shaft Ø 6mm available)
- Rotational life up to 25’000 cycles
- 1.5, 8, 15 or 20 Ncm torque
- 12 (non-shorting) or 24 (shorting) positions with or without end stop (reduction of positions available)
- Various poles available with various positions (e.g. 2 poles / 24 positions)
- IP60 and IP68 shaft / front panel sealing
- Mounting with pins for PCB or eyelets
- Operating temperature -40 to +85 °C
- Hand and wave soldering possible

07R

Selector switch

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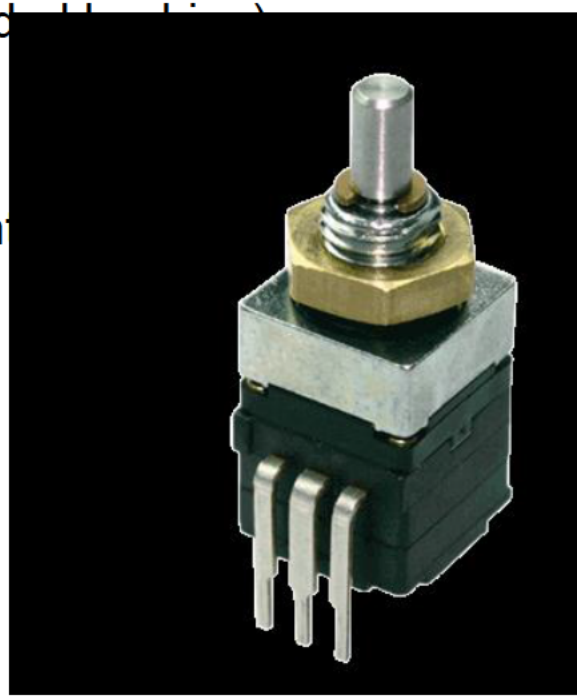
Miniature selector switch with shaft or screwdriver with bezel

- Body size 10.5 x 10.2 x 10.35 mm (14.1 mm with thread
- Stainless steel (1.4305) shaft with Ø 3 mm
- Rotational life 10'000 cycles
- 1 pole, 2 to 4 positions (max. 5 positions with 36° deten
- 2.2 or 3.5 Ncm torque
- Shorting or non-shorting switching mode
- IP60 and IP68 shaft / front panel sealing
- Operating temperature -40 to +85 °C
- Horizontal or vertical mounting (TH
- Hand and wave soldering possible



Audio solutions

Main features

- High performance audio selector switches, series and ladder type attenuator
- Switching mode in shorting or non-shorting
- Stainless steel shaft
- Low-bounce wiper with 3 micron hard gold plated PCB
- 1.5, 4, 8 and 15 Ncm detent torque
- Single piece packed

High performance audio attenuator with up to 47 Positions

- Body size 36 x 36 x 42 mm
- Stainless steel (1.4305) shaft with Ø 6 mm
- Rotational life up to 25’000 cycles
- 1.5, 4, 8 and 15 Ncm torque
- 47 positions with or without end stop (reduction of positions available)
- Shorting or non-shorting switching mode
- Up to 6 channels
- 10’000, 25’000, 50’000, 100’000 oder 600’000 Ohm impedance per wafer
- Various number of wafers possible (max. 8)
- Horizontal or vertical mounting

A47 Jumbo

Audio solutions

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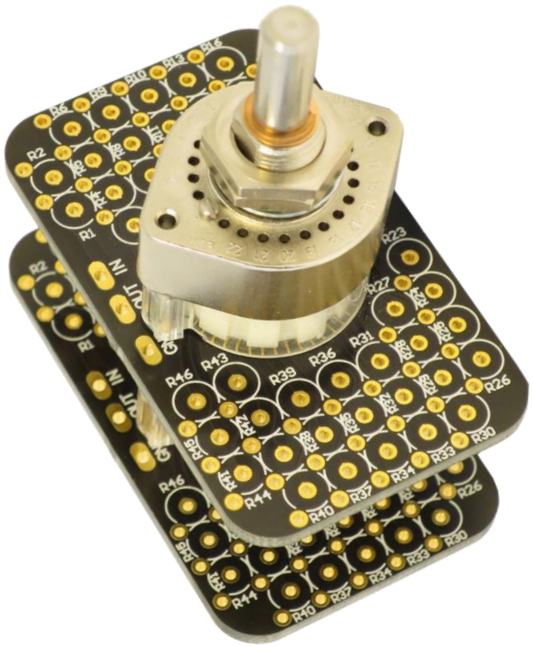
High performance PCB based audio attenuator for large size resistors

- Body size 62 x 38 x 42 mm
- Stainless steel (1.4305) shaft with Ø 6 mm
- Rotational life up to 25’000 cycles
- Low-bounce contact system with 3 micron gold plating
- 1.5, 4, 8 and 15 Ncm torque
- 47 positions with or without end stop
  (reduction of positions available)
- Up to 2 channels
- For resistors up to Ø 5 mm
- Various number of wafers possible (max. 6)



Knobs

Main features

- Precise quality knobs
- Secure collet mounting
- Wide variety
- Customized colours on request

Aluminium knobs suitable for round and D-shafts

- Depending on the design, the outer Ø and length are as following:
  - Ø 16 / 18 mm x 16 mm (Shape)
  - Ø 26 / 32 mm x 18 mm (Shaper)
  - Ø 38.7 / 39 mm x 13.7 mm (Dimple)
  - Ø 19 / 17 mm x 18 mm (Pure)
  - Ø 28.6 / 27 mm x 16 mm (Robot, knurl)
  - Ø 40.5 / 33.3 mm x 13.5 mm (Space)
  - Ø 45.4 / 45 mm x 13.7 mm (Cone)
  - Ø 36 / 17.9 mm x 21 mm (Medic)
- Suitable for shaft Ø 3 mm / 1/8” / 4 mm / 6 mm / 1/4”
- Anodized scratch resistant surface
- Electrically non-conducting

Classic collet knobs

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Secure plastic collet mounting knobs with cap

- Depending on the design, the outer Ø and length are as following:
  - Ø 9 mm x 16 mm
  - Ø 10 mm x 14 mm
  - Ø 14.5 mm x 17 mm
  - Ø 21 mm x 18.5 mm
  - Ø 28 mm x 18.5 mm
  - Ø 36 mm x 20 mm
  - Ø 45 mm x 24.5 mm
- Suitable for shaft Ø 2 mm / 3 mm / 1/8” / 4 mm / 6 mm / 1/4”
- Anodized scratch resistant surface
- Electrically non-conducting
- Various colors available

Thank you

for your attention

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For further information please
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Contact

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