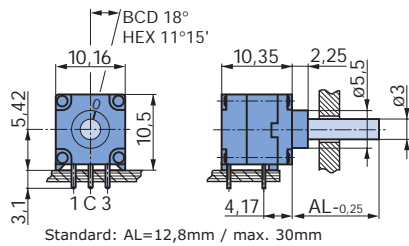


# Coded Switches Type 07

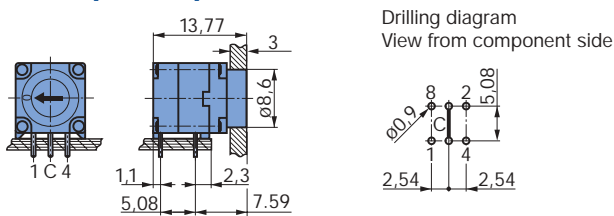
- 10/16 position coded output
- >10'000 switching cycles
- up to 3,5 Ncm torque
- small and rugged
- steel spindle-shaft
- sealable up to IP 68 (2bar)
- reflow version available



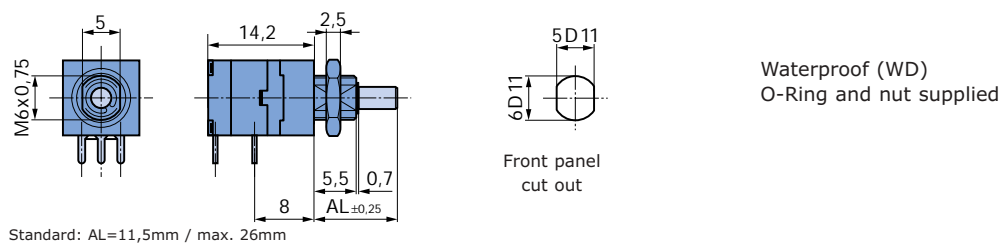
## Horizontal



## Front panel operation

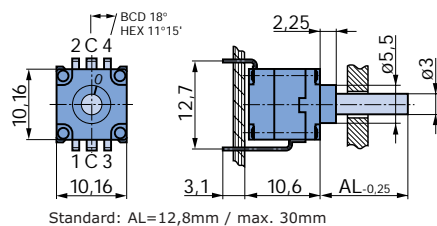


## Horizontal for panel mounting

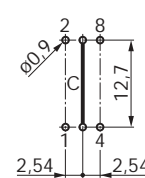


Standard: AL=11,5mm / max. 26mm

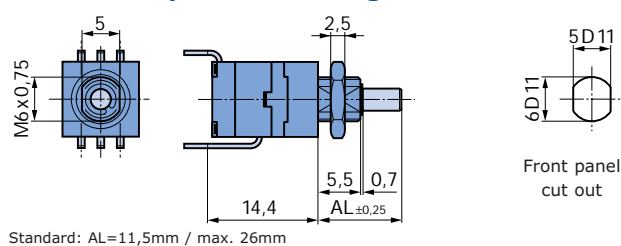
## Vertical



Drilling diagram  
View from component side



## Vertical for panel mounting



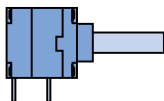
Standard: AL=11,5mm / max. 26mm

## Possible modifications on request

- special type of shaft (length, form)
- special torque
- panel mounting
- waterproof
- different number of positions (internal stop)
- anti-static packaging
- shortened bush
- tape & reel packaging

# Type 07 Horizontal

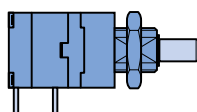
## With spindle-shaft



Coding	Switching function	Position	Indexing angle	with end stop	endless rotating
BCD	shorting	10 (0-9)	36°	07-1133	07-1033
	non-shorting	10 (0-9)	36°	07-1134	07-1034
BCD compl.	shorting	10 (0-9)	36°	07-1143	07-1043
HEX	shorting	16 (0-F)	22,5°	07-1153	07-1053
	non-shorting	16 (0-F)	22,5°	07-1154	07-1054
HEX compl.	shorting	16 (0-F)	22,5°	07-1163	07-1063
Gray code	shorting	16 (0-F)	22,5°	07-1173	07-1073

packing unit : 50 pieces

## With spindle-shaft /with end stop / panel mounting / waterproof IP 68/2bar

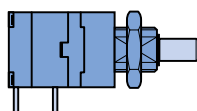


Coding	Switching function	Position	Indexing angle	with end stop
BCD	shorting	10 (0-9)	36°	07-1133-300000
	non-shorting	10 (0-9)	36°	07-1134-300000
BCD compl.	shorting	10 (0-9)	36°	07-1143-300000
HEX	shorting	16 (0-F)	22,5°	07-1153-300000
	non-shorting	16 (0-F)	22,5°	07-1154-300000
HEX compl.	shorting	16 (0-F)	22,5°	07-1163-300000
Gray code	shorting	16 (0-F)	22,5°	07-1173-300000

O-Ring and nut supplied

packing unit : 50 pieces

## With spindle-shaft / endless rotating / panel mounting / waterproof IP 68/2bar

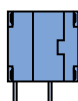


Coding	Switching function	Position	Indexing angle	endless rotating
BCD	shorting	10 (0-9)	36°	07-1033-300000
	non-shorting	10 (0-9)	36°	07-1034-300000
BCD compl.	shorting	10 (0-9)	36°	07-1043-300000
HEX	shorting	16 (0-F)	22,5°	07-1053-300000
	non-shorting	16 (0-F)	22,5°	07-1054-300000
HEX compl.	shorting	16 (0-F)	22,5°	07-1063-300000
Gray code	shorting	16 (0-F)	22,5°	07-1073-300000

O-Ring and nut supplied

packing unit : 50 pieces

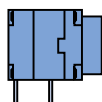
## Screwdriver actuation



Coding	Switching function	Position	Indexing angle	with end stop	endless rotating
BCD	shorting	10 (0-9)	36°	07-0133	07-0033
	non-shorting	10 (0-9)	36°	07-0134	07-0034
BCD compl.	shorting	10 (0-9)	36°	07-0143	07-0043
HEX	shorting	16 (0-F)	22,5°	07-0153	07-0053
	non-shorting	16 (0-F)	22,5°	07-0154	07-0054
HEX compl.	shorting	16 (0-F)	22,5°	07-0163	07-0063
Gray code	shorting	16 (0-F)	22,5°	07-0173	07-0073

packing unit : 50 pieces

## Front panel operation / screwdriver actuation



Coding	Switching function	Position	Indexing angle	with end stop	endless rotating
BCD	shorting	10 (0-9)	36°	07-4133	07-4033
	non-shorting	10 (0-9)	36°	07-4134	07-4034
BCD compl.	shorting	10 (0-9)	36°	07-4143	07-4043
HEX	shorting	16 (0-F)	22,5°	07-4153	07-4053
	non-shorting	16 (0-F)	22,5°	07-4154	07-4054
HEX compl.	shorting	16 (0-F)	22,5°	07-4163	07-4063
Gray code	shorting	16 (0-F)	22,5°	07-4173	07-4073

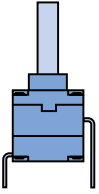
packing unit : 50 pieces

1 mm = 0.04 inch, 1 inch = 25.4 mm

Items available from stock!

# Type 07 Vertical

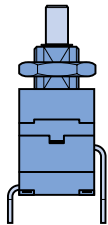
## With spindle-shaft



Coding	Switching function	Position	Indexing angle	with end stop	endless rotating
BCD	shorting	10 (0-9)	36°	07-3133	07-3033
	non-shorting	10 (0-9)	36°	07-3134	07-3034
BCD compl.	shorting	10 (0-9)	36°	07-3143	07-3043
HEX	shorting	16 (0-F)	22,5°	07-3153	07-3053
	non-shorting	16 (0-F)	22,5°	07-3154	07-3054
HEX compl.	shorting	16 (0-F)	22,5°	07-3163	07-3063
Gray code	shorting	16 (0-F)	22,5°	07-3173	07-3073

packing unit : 50 pieces

## With spindle-shaft / with end stop / panel mounting / waterproof IP 68/2bar

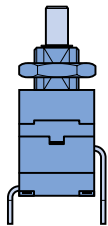


Coding	Switching function	Position	Indexing angle	with end stop
BCD	shorting	10 (0-9)	36°	07-3133-300000
	non-shorting	10 (0-9)	36°	07-3134-300000
BCD compl.	shorting	10 (0-9)	36°	07-3143-300000
HEX	shorting	16 (0-F)	22,5°	07-3153-300000
	non-shorting	16 (0-F)	22,5°	07-3154-300000
HEX compl.	shorting	16 (0-F)	22,5°	07-3163-300000
Gray code	shorting	16 (0-F)	22,5°	07-3173-300000

O-Ring and nut supplied

packing unit : 50 pieces

## With spindle-shaft / endless rotating / panel mounting / waterproof IP 68/2bar

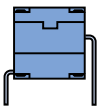


Coding	Switching function	Position	Indexing angle	endless rotating
BCD	shorting	10 (0-9)	36°	07-3033-300000
	non-shorting	10 (0-9)	36°	07-3034-300000
BCD compl.	shorting	10 (0-9)	36°	07-3043-300000
HEX	shorting	16 (0-F)	22,5°	07-3053-300000
	non-shorting	16 (0-F)	22,5°	07-3054-300000
HEX compl.	shorting	16 (0-F)	22,5°	07-3063-300000
Gray code	shorting	16 (0-F)	22,5°	07-3073-300000

O-Ring and nut supplied

packing unit : 50 pieces

## Screwdriver actuation

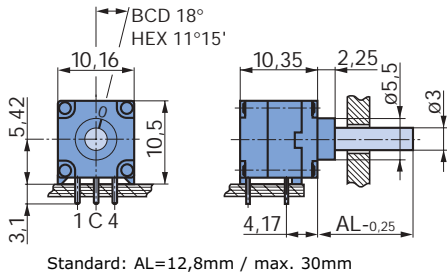


Coding	Switching function	Position	Indexing angle	with end stop	endless rotating
BCD	shorting	10 (0-9)	36°	07-2133	07-2033
	non-shorting	10 (0-9)	36°	07-2134	07-2034
BCD compl.	shorting	10 (0-9)	36°	07-2143	07-2043
HEX	shorting	16 (0-F)	22,5°	07-2153	07-2053
	non-shorting	16 (0-F)	22,5°	07-2154	07-2054
HEX compl.	shorting	16 (0-F)	22,5°	07-2163	07-2063
Gray code	shorting	16 (0-F)	22,5°	07-2173	07-2073

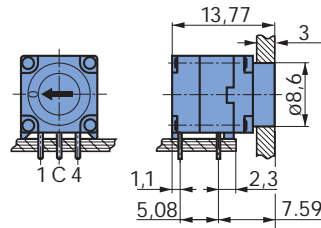
packing unit : 50 pieces

# Coded Switches Type 07

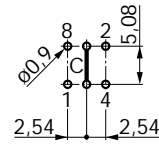
## Horizontal



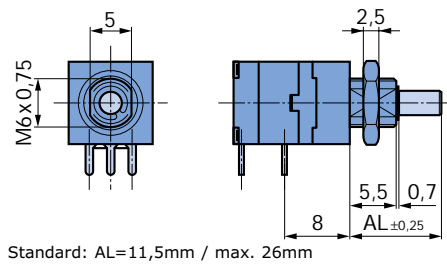
## Front-panel operation



Drilling diagram  
View from component side

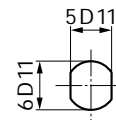


## Horizontal for panel mounting

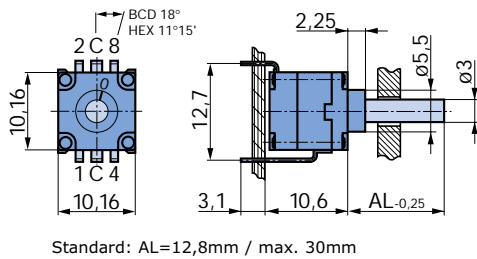


Panel mounting waterproof  
O-Ring and nut supplied

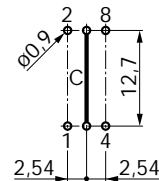
Front-panel cut out



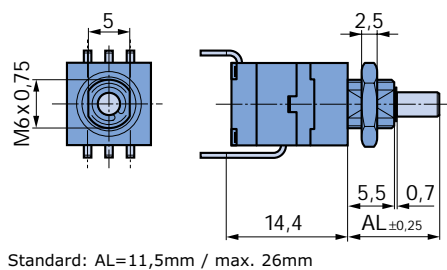
## Vertical



Drilling diagram  
View from component side

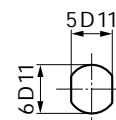


## Vertical for panel mounting



Panel mounting waterproof  
O-Ring and nut supplied

Front-panel cut out



## Description

BCD-, HEX or Gray coding.  
Shorting or non-shorting switch mode.  
Horizontal or vertical version.  
Operation by screwdriver or stainless steel shaft (knob).

Sealed and washable

Rotation with positive detent setting

Solid tinned terminals  
(0,4 x 0,7 mm)

Terminations for direct mounting on circuit boards  
2.54 mm (0.1") pitch

Indexing positions, end stop according to the code 16 resp. 10 positions with stop between the first and last position or without stop setting

Reflow version available on request

# Coded Switches Type 07

## Technical information

### Mechanical data

*Indexing mechanism*  
36° = 10 positions (BCD)  
22° 30' = 16 positions  
(HEX and Gray code)

*Switching torque*  
2,2 Ncm  
± 25% (BCD)  
3,2 Ncm  
± 25% (HEX and Gray code)

*Max. force on the end-stop*  
45 Ncm (BCD)  
35 Ncm (HEX and Gray code)

*Panel mounting*  
admissible torque max. 100 Ncm

*Temperature range*  
Storage temperature: -40 °C to +85 °C  
Operating temperature: -25 °C to +85 °C

*Vibration resistance*  
10-2000 Hz/10 g

*Life*  
>10000 switching cycles  
(>200000 switching positions BCD)  
(>320000 switching positions  
HEX or Gray)

### Material data

*Case*  
high quality temperature-resistant  
thermoplastic

*Spindle-shaft*  
stainless steel

*Insulation*  
high quality thermoplastic

*Contact parts*  
alloy copper > 3 µm gold plated

### Soldering data

*Handsoldering*  
Plastic wafer ≤ 5 s/≤ 260 °C

*Machine soldering*  
Wave ≤ 5 s/≤ 260 °C  
Reflow (THR) ≤ 5 s/≤ 260 °C  
(on request)  
Lead free reflow (on request)

### Electrical data

*Application data*  
Voltage < 42 V  
Current < 2 A

*Switching capacity*  
5 VA

*Switching voltage*  
≤ 42 V (resistive load)

*Switching current*  
≤ 0,2 A (resistive load)

*Test voltage at 50 Hz/i min*  
≥ 500 V ~

*Insulation resistance at 500 V = 1 min*  
≥ 10<sup>11</sup> Ω

*Contact and lead resistance*  
< 50 mΩ in new condition

### Various

Assembled in cleanroom  
Class 100 000, US Federal Standard

Sealed and washable

*IP protection degree*  
sealable up to IP 68 (5bar)

## Coding

### BCD

	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>
0				
1				●
2			●	
3			●	●
4		●		
5		●		●
6		●	●	
7		●	●	●
8	●			
9	●			●

### BCD complem.

	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>
0	●	●	●	●
1	●	●	●	
2	●	●		●
3	●	●		
4	●		●	●
5	●		●	
6	●			●
7	●			
8		●	●	●
9		●	●	

### HEX

	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>
0				
1				●
2			●	
3			●	●
4		●		
5		●		●
6		●	●	
7		●	●	●
8	●			
9	●			●
A	●		●	
B	●		●	●
C	●	●		
D	●	●		●
E	●	●	●	
F	●	●	●	●

### HEX complem.

	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>
0	●	●	●	●
1	●	●	●	
2	●	●		●
3	●	●		
4	●		●	●
5	●		●	
6	●			●
7	●			
8		●	●	●
9		●	●	
A		●		●
B		●		
C			●	●
D			●	
E				●
F				

### Gray Code

	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>
0				
1				●
2			●	●
3			●	
4		●	●	
5		●	●	●
6		●		●
7		●		
8	●	●		
9	●	●		●
A	●	●	●	●
B	●	●	●	
C	●		●	
D	●		●	●
E	●			●
F	●			

# Special Options Type 07

## Ordering an option

To order a special option please use the order form on page 63. Please specify your requirements and send it to your local contact or to Elma.

## Special shaft length

Please state length AL (see diagram) measured from mounting face when ordering (max. AL = 30 mm)  
Specify shaft length on page 63.

## Panel mounting/waterproof version M6 x 0.75

The threaded bushing is made of die cast allows (2,5 µm tin plated, chromate finish) for enviromental protection such as salt fog exposure. Max. admissible tightening torque for nuts 100 Ncm (~10 kp cm)

### Order example

ZB (panel mounting)  
ZB/WD (panel mounting and waterproof)

Waterproof 2 bar (IP 68) standard, (higher level on request)

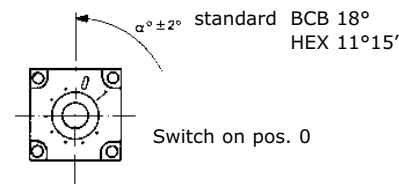
Please complete order form on page 63.

## Adjustable stops (internal stop)

Adjustable stops can be set during assembly on all switch positions between 1 and 16, e. g. coded output 0 to F. Adjustable stop settings which do not start from coded output 0 ( e. g. 3-6) are available on request. Please complete order form on page 63.

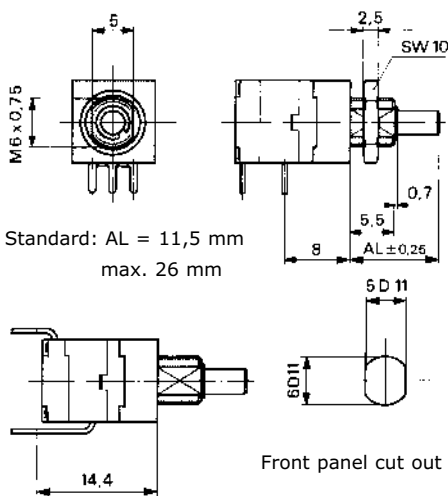
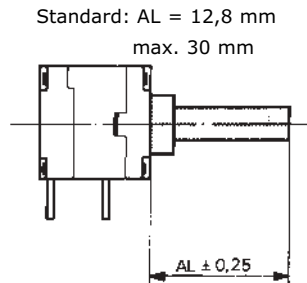
## Special type of shaft

Specially machined shafts are available. Please attach a sketch or drawing to your order. Specify dimensions on page 63.

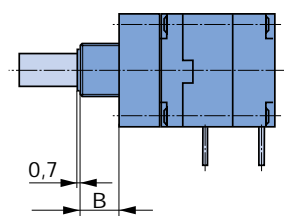


## Shortened bush

Please state dimension B  
Dimension B = min. 3,5 mm / max. 5,5 mm  
Specify dimensions on page 63.

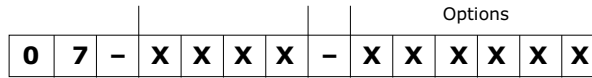


Panel mounting waterproof  
O-Ring and nut supplied



# Ordering code to Type 07

This code specifies the function of the switch



Switch Type

- 0 = horizontal (screwdriver actuation)
- 1 = horizontal with shaft
- 2 = vertical (screwdriver actuation)
- 3 = vertical with shaft
- 4 = horizontal FKS (Front panel operation)

- 0 = endless rotation
- 1 = with end stop

- 3 = BCD
- 4 = BCD - compl.
- 5 = Hex
- 6 = Hex - compl.
- 7 = Gray-Code

- 3 = shorting
- 4 = non-shorting

- 0 = Standard
- E = BG 15 Pos. 0 - E
- D = BG 14 Pos. 0 - D
- C = BG 13 Pos. 0 - C
- B = BG 12 Pos. 0 - B
- A = BG 11 Pos. 0 - A
- 9 = BG 10 Pos. 0 - 9
- 8 = BG 9 Pos. 0 - 8
- 7 = BG 8 Pos. 0 - 7
- 6 = BG 7 Pos. 0 - 6
- 5 = BG 6 Pos. 0 - 5
- 4 = BG 5 Pos. 0 - 4
- 3 = BG 4 Pos. 0 - 3
- 2 = BG 3 Pos. 0 - 2
- 1 = BG 2 Pos. 0 - 1
- (BG = special end stop)

- 000 = Standard AL 12,8  
Panel mounting AL 11,5mm
- XXX = AL (shaft length)  
z. B. AL 10,5 mm = 105

- 00 = Standard
- 20 = ZB (panel mounting)
- 30 = ZB / WD (panel mounting/waterproof)

- = Standard
- V = Anti-static package
- T = 3,5 Ncm torque
- S = 3,5 Ncm torque and anti-static package

BG = Special end stop  
AL = Shaft length  
ZB = Panel mounting  
WD = Waterproof  
FKS = Front panel operation



# Important Facts on Coded Switches

## Gray Code

The Gray Code is primarily used for switching circuits which do not allow an undefined situation at the time of switching. This is achieved by changing only one signal value per actuation.

## Coding

BCD

	$2^3$	$2^2$	$2^1$	$2^0$
0				
1				•
2			•	
3			•	•
4		•		
5		•		•
6		•	•	
7		•	•	•
8	•			
9	•			•

BCD complementary

	$2^3$	$2^2$	$2^1$	$2^0$
0	•	•	•	•
1	•	•	•	
2	•	•		•
3	•	•		
4	•		•	•
5	•		•	
6	•			•
7	•			
8		•	•	•
9		•	•	

HEX

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

HEX complementary

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

Gray Code

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