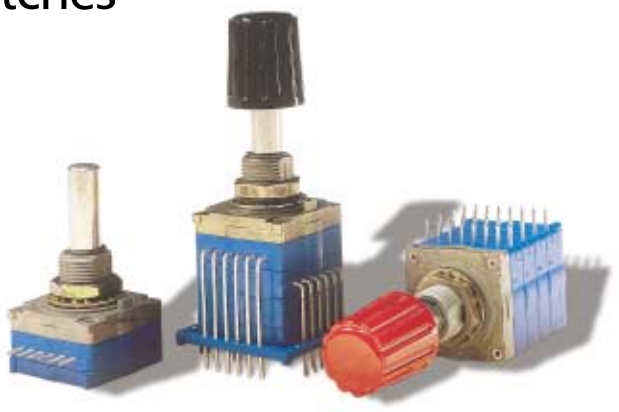
RTBH and RTBV Rotary Switches



The rotary switch RTB is designed as either a code switch or as a multiposition switch for PCB mounting.

There are 2 types:
RTBH horizontal mounting
RTBV vertical mounting

The tables on the next page show the contact arrangements for standard codes.

- Totally sealed: immersion test acc. to MIL R22.097 F and NFC 20631/QF
- Detent angles 15°, 22.5°, 30° and 36° corresponding to the number of positions: 24, 16, 12 or 10
- Favorable price/performance ratio
- Codes:
  Binary code
  Complementary binary code
  Binary code + complement
  Gray code
- Other codes on request
- Standard functions
  1 pole 10 – 1 pole 12 positions
  1 pole 16 – 1 pole 24 positions
  2 poles 6 positions

Options

- Shaft diameter 6.0 or 6.35 mm (0.236 or 0.250 (= 1/4″))
- Hollow shaft 6.0 × 2.10 mm (0.236 × 0.0827)
- Double shaft 6 × 2.10 mm (0.236 × 0.0827)
- Flat shaft
  Length (a): 10 mm
  Thickness (e): 5 mm
  Angulation: K=0°

Mechanical data			
Number of banks		RTBV = 1 to 4	RTBH = 10
Operating torque		5 Ncm ± 30% (with 1 module)	
Mechanical stop resistance		> 70 Ncm	
Bush mounting torque		100 Ncm	
Stop		With or without	
Mounting		By bush with double flat or by index at 9.5 mm (0.374) of shaft	
Contact material		AG = silver, AU = gold	
Housing material		Extinguishible thermoplastic	

Electrical data		AG = silver	AU = gold
Switching mode[1])		non-shorting (BBM)	non-shorting (BBM)
Max. switching power		5 VA	0.2 VA
Switching current	Max.	250 mA	20 mA
	Min.	10 mA	1 mA
Max. carrying current		5 A	1 A
Voltage	Max.	25 V	25 V
	Min.	5 V	1 V
Bounce		< 5 ms	< 5 ms
Contact resistance after life		< 100 mΩ	< 100 mΩ
Dielectric strength between contacts or contacts and frame		500 V rms	500 V rms
Insulation resistance between contacts and contacts and frame		> 10^9 Ω	> 10^9 Ω
Number of operations with max. power in			
	24 positions	5 000	10 000
	16 positions	10 000	15 000
	12 positions	10 000	20 000
	10 positions	15 000	25 000

Further data	
Climatic category	25/70/21
Operating temperature	– 25°C to + 70°C
Storage temperature	– 40°C to + 85°C
Humidity test	21 days (+ 40°C, 93% RH)
Solderability	Conform to spec. CEI 68-2-20
Cleaning	This switch can withstand all operations of soldering and cleaning (solvent and water). Immersion test CEI 68-2-17 and MIL R22.097 F

Functions				
Angle between 2 positions	15°	22.5°	30°	36°
Number of positions	24	16	12	10

[1]) BBM = Break Before Make (non-shorting)

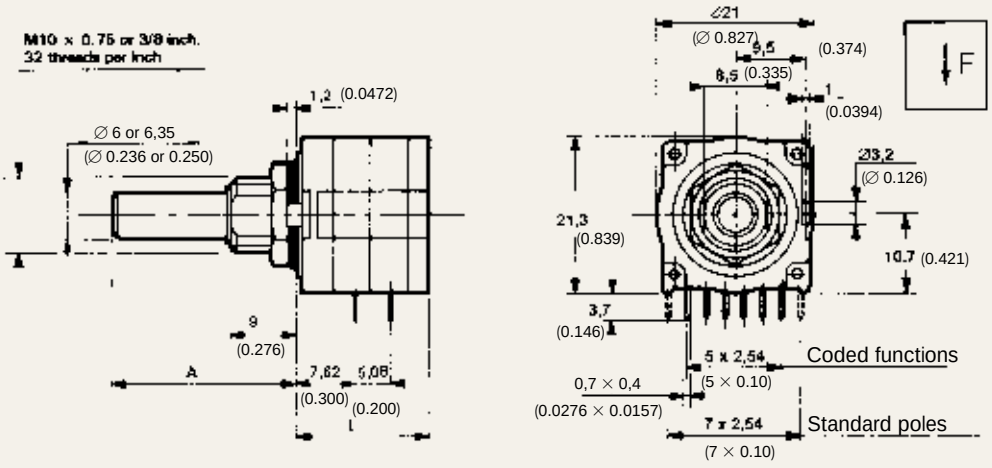
Ordering code: see page F-25.

Dimensional Drawings

RTBH

Dimensions L

Number of modules	L mm	L inch
1	12.7	0.500
2	17.78	0.700
3	22.86	0.900
4	27.94	1.10
A (standard): 25 mm (0.984 inch)		
Shaft: ∅ 6 or 6.35 mm (0.236 or 0.250 inch)		

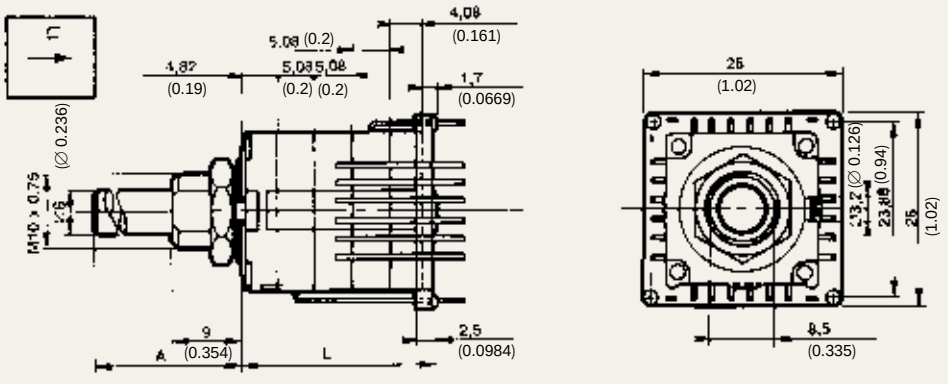


Dimensional Drawings

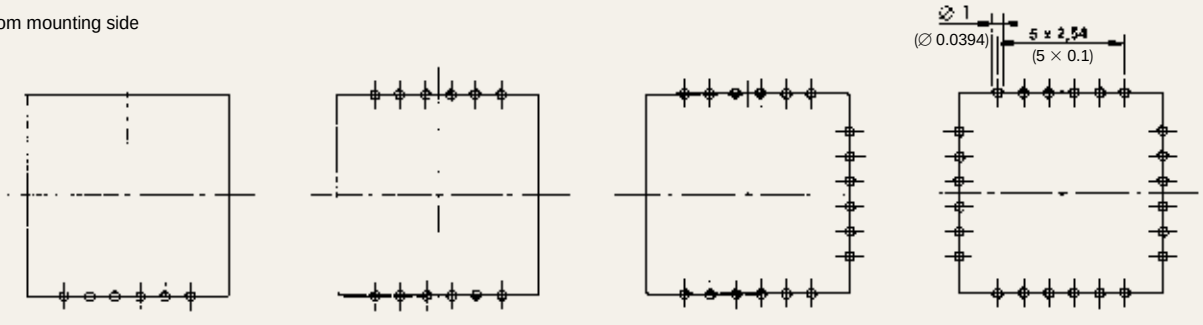
RTBV

Dimensions L

Number of modules	L mm	L inch
1	10.65	0.419
2	15.73	0.619
3	20.81	0.819
4	25.89	1.02
A (standard): 25 mm (0.984 inch)		
Shaft: ∅ 6 or 6.35 mm (0.236 or 0.250 inch)		



Seen from mounting side

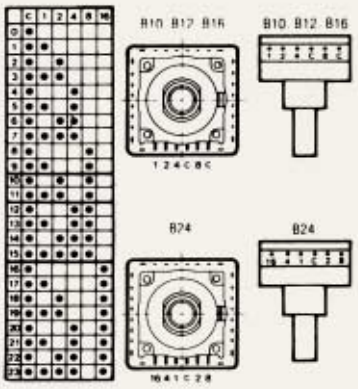


1 module 2 module 3 module 4 module

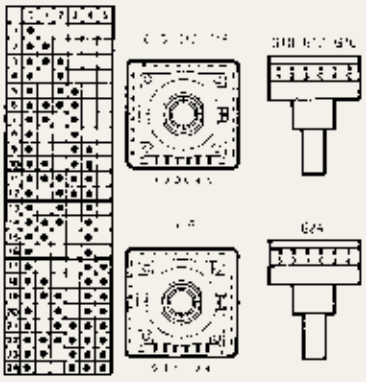
RTBH and RTBV Rotary Switches

PC board layout and through tables for horizontal and vertical RTB

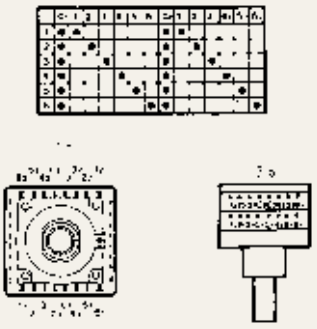
Binary direct code



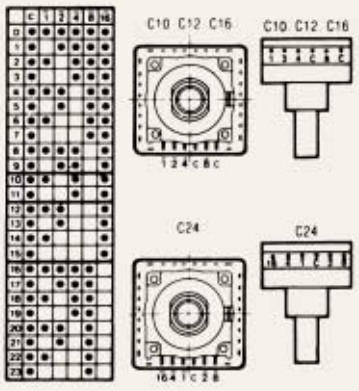
Gray code



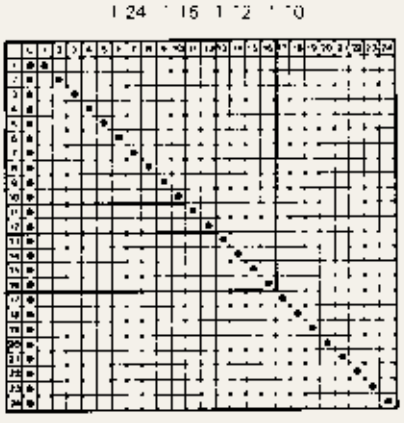
2 poles 6 positions (30 °)



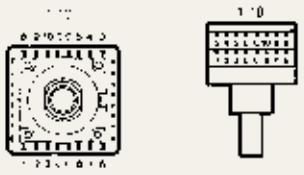
Complement binary code



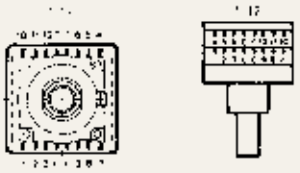
Standard functions



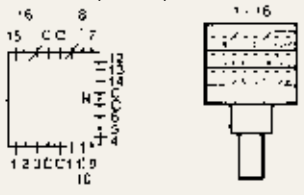
1 pole 10 positions



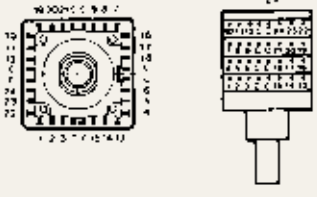
1 pole 12 positions



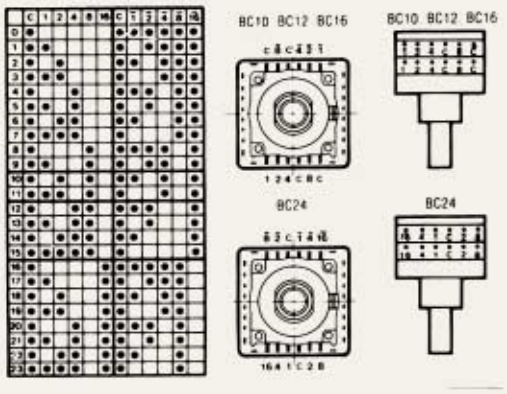
1 pole 16 positions



1 pole 24 positions



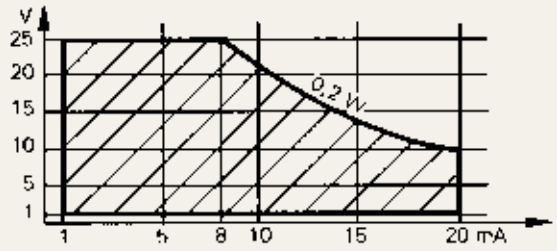
Direct and complement binary code



Note:
Horizontal RTBH are seen from the top.
Vertical RTBV are seen from shaft side.

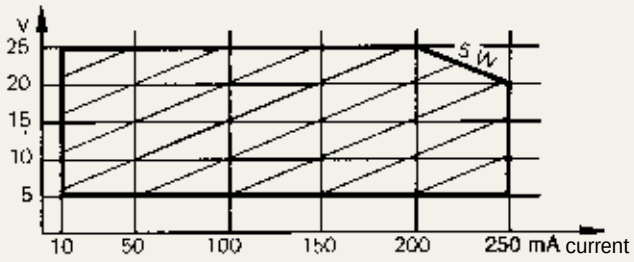
Switching power

RTB (gold contacts)



Switching power: 0.2 W
Max. voltage: 25 V
Min. voltage: 1 V
Max. switching current: 20 mA
Min. switching current: 1 mA

RTB (silver contacts)



Switching power: 5 W
Max. voltage: 25 V
Min. voltage: 5 V
Max. switching current: 250 mA
Min. switching current: 10 mA

Standard functions available

Angle	Max. number of positions	Functions	Number of banks	Functions	Number of banks
15°	24	Binary direct Binary complement Binary direct + complement Gray	1 1 2 1	1 × 24 p NCC	4
36°	10	Binary direct Binary complement Binary direct + complement Gray	1 1 2 1	1 × 10 p NCC	2
22.5, 30°	16	Binary direct Binary complement Binary direct + complement Gray	1 1 2 1	1 × 16 p NCC Bit generator	3 1
30°	12	Binary direct Binary complement Binary direct + complement Gray	1 1 2 1	1 × 12 p NCC 2 × 6 p NCC	2 2

Ordering code		1	2	3	4	5	6	7	8	9	10
	Example:	RTBV	36	1	110	B10	DE	D6	M	25	G
1	**Designation:** RTBH, RTBV										
2	**Detent angle** (between 2 positions): 15, 22.5, 30, 36										
3	**Number of banks:** RTBH = 1 to 10, RTBV = 1 to 4										
4	**Number of poles and max. number of positions or code** (B = binary code, C = complement binary code, BC = direct + complement): **15°:** 124, B, C, BC; **22.5°:** 116, B, C, BC; **30°:** 112, 206, B, C, BC; **36°:** 110, B, C, BC										
5	**Stop:** B.. = stop with number of position, S = without										
6	**Bush:** AD = with, DE = sealed bush										
7	**Shaft diameter:** D6 = 6 mm (0.236 inch), D63 = 6.35 mm (0.250 inch), H62 = hollow shaft (6/2 mm (0.236/0.0787 inch))										
8	**Options of shaft:** M = flat shaft, F = screw driver slot										
9	**Max. shaft length:** 25 mm (0.984 inch)										
10	**Contact material:** S = silver plated, G = gold plated										