

## General-purpose Limit Switch

D4B-□N

- Snap-action or slow-action contact for accurate switching with safe operation via direct drive positive contact opening even with metal deposition between mating contacts.
- Two sets of contact: one (NC) for safety circuit and the other (NO) for control circuit.
- Enclosure rating: IP67 (IEC529), UL/CSA type 3, 4, 4X, 6P and 13.
- Wide standard operating temperature range: -40°C to 80°C (standard type).
- Conforms to EN50041 (42.5 x 60 mm) with the Forms A, B, C and D.
- Actuators are interchangeable and can be mounted in any of four directions.
- 3-conduit switches are available.
- Safety Standards:
  - Conformity:
    - Machinery Directive
    - Low Voltage Directive
    - EN1088
    - EN50041
  - Approval:



Agency	Standard	File No.	
		Snap-action	Slow-action
TÜV Rheinland	EN60947-5-1 ⊕	With ⊕ R9850211 Without ⊕ R9151372	R9151643
BIA	EN60947-5-1 GS-ET-15 ⊕	Pending	9202158
UL	UL508	E76675	
CSA	CSA C22.1 No.14	LR45746	
SUVA	SUVA ⊕	Pending	4887

## Ordering Information

### Model Number Legend:

D4B - □ □ □ □ N - □  
           1   2   3   4

#### 1. Conduit

- 1: PG13.5 (standard)
- 2: G1/2 (PF1/2) (standard)
- 3: 1/2-14NPT (standard)
- 5: PG13.5 (3-conduit)
- 6: G1/2 (PF1/2) (3-conduit)
- 7: 1/2-14NPT (3-conduit)

#### 2. Built-in Switch

- 1: 1NC/1NO (Snap-action)
- A: 2NC (Slow-action)
- 5: 1NC/1NO (Slow-action)




#### 3. Actuator

- 11: Roller lever (standard)
- 16: Adjustable roller lever
- 17: Adjustable rod lever
- 70: Top plunger
- 71: Top roller lever
- 81: Coil spring
- 87: Plastic rod
- 00: Switch box (without head)
- 1R: Roller lever (conventional D4B-compatible)

#### 4. Indicator




- LD: LED (10 to 115 VDC/VAC)
- LE: Neon lamp (125/250 VAC)

## ■ Standard Switch (EN50041)

Actuator		Conduit size								
		PG13.5 (see note 2)			G1/2			1/2-14NPT		
		1NC/1NO (Snap-action)	1NC/1NO (Slow-action)	2NC (Slow-action)	1NC/1NO (Snap-action)	1NC/1NO (Slow-action)	2NC (Slow-action)	1NC/1NO (Snap-action)	1NC/1NO (Slow-action)	2NC (Slow-action)
Side rotary	Roller lever (form A)	D4B-1111N	D4B-1511N	D4B-1A11N	D4B-2111N	D4B-2511N	D4B-2A11N	D4B-3111N	D4B-3511N	D4B-3A11N
	Adjustable roller lever (see note 1)	D4B-1116N	D4B-1516N	D4B-1A16N	D4B-2116N	D4B-2516N	D4B-2A16N	D4B-3116N	D4B-3516N	D4B-3A16N
	Adjustable rod lever (form D) (see note 1)	D4B-1117N	D4B-1517N	D4B-1A17N	D4B-2117N	D4B-2517N	D4B-2A17N	D4B-3117N	D4B-3517N	D4B-3A17N
Top plunger	Plain (form B)	D4B-1170N	D4B-1570N	D4B-1A70N	D4B-2170N	D4B-2570N	D4B-2A70N	D4B-3170N	D4B-3570N	D4B-3A70N
	Roller (form C)	D4B-1171N	D4B-1571N	D4B-1A71N	D4B-2171N	D4B-2571N	D4B-2A71N	D4B-3171N	D4B-3571N	D4B-3A71N
Wobble lever (see note 3)	Coil spring	D4B-1181N	---	D4B-1A81N	D4B-2181N	---	D4B-2A81N	D4B-3181N	---	D4B-3A81N
	Plastic rod	D4B-1187N	---	D4B-1A87N	D4B-2187N	---	D4B-2A87N	D4B-3187N	---	D4B-3A87N
Standards		EN60947-5-1 			EN60947-5-1 			EN60947-5-1 		

- Note:**
1. The adjustable roller lever and adjustable rod lever models are approved under the Forced Opening Certificate (TÜV) of the EN standard, but they do not conform to the GS-ET-15 Standard (BIA) and SUVA.
  2. The D4B-□N is a Limit Switch conforming to European standards, and PG13.5 is commonly used in Europe.
  3. The wobble lever models are ordinary limit switches and are not approved under EN, GS, and SUVA's Forced Opening Certificate.

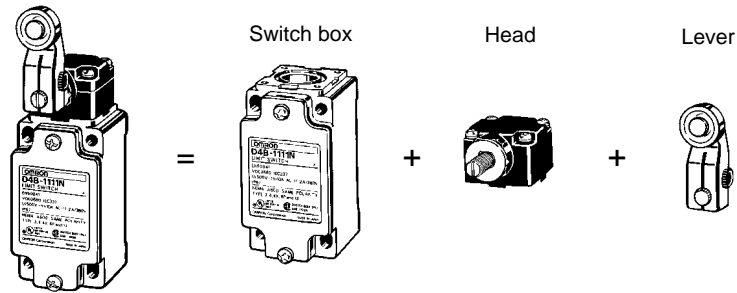
## ■ 3-conduit Switch

Actuator		Conduit size								
		PG13.5 (see note 2)			G1/2			1/2-14NPT		
		1NC/1NO (Snap-action)	1NC/1NO (Slow-action)	2NC (Slow-action)	1NC/1NO (Snap-action)	1NC/1NO (Slow-action)	2NC (Slow-action)	1NC/1NO (Snap-action)	1NC/1NO (Slow-action)	2NC (Slow-action)
Side rotary	Roller lever (form A)	D4B-5111N	D4B-5511N	D4B-5A11N	D4B-6111N	D4B-6511N	D4B-6A11N	D4B-7111N	D4B-7511N	D4B-7A11N
	Adjustable roller lever (see note 1)	D4B-5116N	D4B-5516N	D4B-5A16N	D4B-6116N	D4B-6516N	D4B-6A16N	D4B-7116N	D4B-7516N	D4B-7A16N
	Adjustable rod lever (form D) (see note 1)	D4B-5117N	D4B-5517N	D4B-5A17N	D4B-6117N	D4B-6517N	D4B-6A17N	D4B-7117N	D4B-7517N	D4B-7A17N
Top plunger	Plain (form B)	D4B-5170N	D4B-5570N	D4B-5A70N	D4B-6170N	D4B-6570N	D4B-6A70N	D4B-7170N	D4B-7570N	D4B-7A70N
	Roller (form C)	D4B-5171N	D4B-5571N	D4B-5A71N	D4B-6171N	D4B-6571N	D4B-6A71N	D4B-7171N	D4B-7571N	D4B-7A71N
Wobble lever (see note 3)	Coil spring	D4B-5181N	---	D4B-5A81N	D4B-6181N	---	D4B-6A81N	D4B-7181N	---	D4B-7A81N
	Plastic rod	D4B-5187N	---	D4B-5A87N	D4B-6187N	---	D4B-6A87N	D4B-7187N	---	D4B-7A87N
Standards		EN60947-5-1 			EN60947-5-1 			EN60947-5-1 		

- Note:**
1. The adjustable roller lever and adjustable rod lever models are approved under the Forced Opening Certificate (TÜV) of the EN standard, but they do not conform to the GS-ET-15 Standard (BIA) and SUVA.
  2. The D4B-□N is a Limit Switch conforming to European standards, and PG13.5 is commonly used in Europe.
  3. The wobble lever models are ordinary limit switches and are not approved under EN, GS, and SUVA's Forced Opening Certificate.

## ■ Replacement Part

Because the D4B-□N employs a block mounting construction, the switch box, operating head, and lever (side rotary type only) may be ordered as a complete assembly or individually as replacement parts. (Replacement parts are not available as a switch box and head assembly or as a head and lever assembly.)



ex. D4B-2111N = D4B-2100N + D4B-0010N + D4B-0001N

### Switch Box

		EN50041			3-conduit type		
		PG13.5	G1/2	1/2-14NPT	PG13.5	G1/2	1/2-14NPT
1NC/1NO (Snap-action)	→	D4B-1100N	D4B-2100N	D4B-3100N	D4B-5100N	D4B-6100N	D4B-7100N
1NC/1NO (Slow-action)	→	D4B-1500N	D4B-2500N	D4B-3500N	D4B-5500N	D4B-6500N	D4B-7500N
2NC (Slow-action)	→	D4B-1A00N	D4B-2A00N	D4B-3A00N	D4B-5A00N	D4B-6A00N	D4B-7A00N

### Operating Heads

Actuator	Type	Model
Side rotary	Standard	D4B-0010N
Top plunger	Plain	D4B-0070N
	Roller	D4B-0071N
Wobble lever	Coil spring	D4B-0081N
	Plastic rod	D4B-0087N

### Levers (for Side Rotary Switches)

Actuator	Length	Diameter of roller	Model
Standard	31.5	17.5 dia.	D4B-0001N
Adjustable roller lever	25 to 89	19 dia.	D4B-0006N
Adjustable rod lever	145 max.	---	D4B-0007N
Interchangeable with D4B-0001	33.7	19 dia.	D4B-000RN

## Specifications

### ■ Ratings

1. TÜV Rheinland-approved: AC-15, 2 A/400 V

2. UL/CSA-approved: A600

Rated voltage	Current			Switching power	
	Continuous	Make	Break	Make	Break
120 VAC	10 A	60 A	6 A	7,200 VA	720 VA
240 VAC		30 A	3 A		
480 VAC		15 A	1.5 A		
600 VAC		12 A	1.2 A		

## ■ Characteristics

Item	Snap-action	Slow-action
Operating speed	1 mm/s to 50 cm/s	
Operating frequency	Mechanical: 120 operations/min Electrical: 30 operations/min	
Rated frequency	50/60 Hz	
Insulation resistance	100 MΩ min. (at 500 VDC) between terminals of the same polarity and between each terminal and non-current-carrying part	
Contact resistance	25 mΩ max. (initial value)	25 mΩ max. (initial value)
<b>Dielectric strength</b>		
Between terminals of same polarity	$U_{imp}$ 2.5 kV	$U_{imp}$ 4 kV
Between terminals of different polarity	---	$U_{imp}$ 4 kV
Between current-carrying metal parts and ground	$U_{imp}$ 4 kV	$U_{imp}$ 4 kV
Between each terminal and non-current-carrying parts	$U_{imp}$ 4 kV	$U_{imp}$ 4 kV
Rated insulation voltage ( $U_i$ )	600 VAC (EN60947-5-1)	
Counter electromotive voltage at switching	1,500 VAC max. (EN60947-5-1)	
Operating environmental pollution level	3 (EN60947-5-1)	
Short-circuit protective device	10-A fuse (type gI or gG) (IEC269)	
Conditional short-circuit current	100 A (EN60947-5-1)	
Conventional enclosed thermal current ( $I_{the}$ )	20 A (EN60947-5-1)	
Electric shock protection class	Class I (with grounding terminal)	
Vibration resistance	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude	
Shock resistance	Destruction: 1,000 m/s <sup>2</sup> min. {approx. 100G min.} Malfunction: 300 m/s <sup>2</sup> min. {approx. 30G min.}	
Life expectancy (see note 2)	Mechanical: 30,000,000 operations min. Electrical: 500,000 operations min.	Mechanical: 10,000,000 operations min. Electrical: 500,000 operations min.
Contact gap	2 x 0.5 mm min.	2 x 2 mm min.
Bounce time	3 ms min.	Same as the operating speed
Ambient temperature	Operating: -40°C to 80°C (with no icing) (see note 4)	
Ambient humidity	Operating: 95% max.	
Degree of protection	IP67 (EN60947-5-1)	
Weight	Approx. 250 g	

**Note:** 1. The above values are for initial operation.

2. The life expectancy is for an ambient temperature of 5°C to 35°C and ambient humidity of 40% to 70%. For further conditions, consult your OMRON sales representative.

3. The values in this table are for an ambient temperature of 5°C to 35°C and ambient humidity of 40% to 70%. For further conditions, consult your OMRON sales representative.

4. -25°C to 80°C for the flexible-rod type.

■ Operating Characteristics

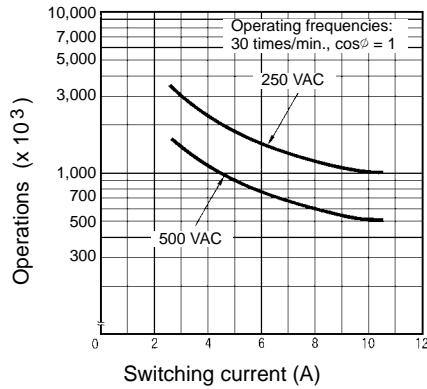
Model	D4B-□□11N	D4B-□□16N (see note 1)	D4B-□□17N (see note 2)	D4B-□□70N	D4B-□□71N	D4B-□□81N	D4B-□□87N
OF max.	9.41 N {960 gf}		2.12 N {216 gf}	18.63 N {1,900 gf}		1.47 N {150 gf}	
RF min.	1.47 N {150 gf}		0.29 N {30 gf}	1.96 N {200 gf}		---	
PT	21±3°			2.0 mm max.		15° max.	
PT (2nd) (see note 3)	(45°)			(3.0 mm)		---	
OT min.	50°			5.0 mm		---	
MD max. (see note 4)	12°			1.0 mm		---	
POT min.	35° (Slow-action models) 55° (Snap-action models)			3.2 mm		---	
POF min.	19.61 N {2,000 gf}			49.03 N {5,000 gf}		---	
TT	(75°)			7.0 mm		---	
FP max.	---			38 mm	51 mm	---	
OP	---			35±1 mm	48±1 mm	---	

- Note:**
1. The operating characteristics of these Switches were measured with the roller lever set at 31.5 mm.
  2. The operating characteristics of these Switches were measured with the rod lever set at 140 mm.
  3. Only for slow-action models.
  4. Only for snap-action models.

Engineering Data

Electrical Life Expectancy  
(Snap-action)

( $\cos\phi = 1$ )



( $\cos\phi = 0.4$ )

