

# DC MCBs Ex9BP up to 720 V DC

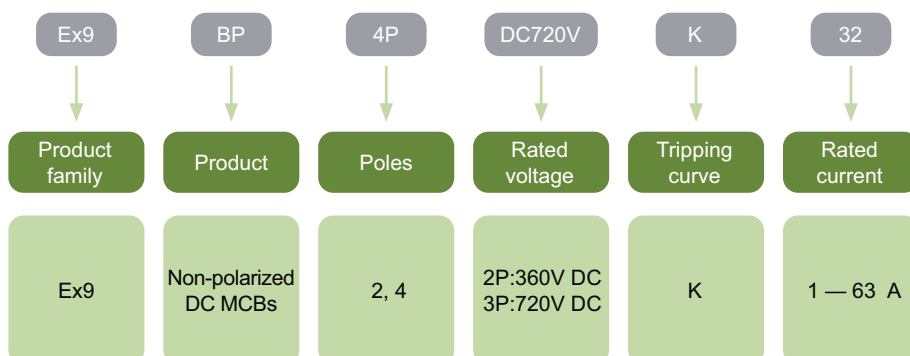


- DC Miniature Circuit Breakers
- Non-polarized, suitable for photovoltaic applications
- Tested according to IEC/EN 60947-2
- Rated short circuit breaking capacity  $I_{cu}$  10 kA
- Rated operating voltage  $U_e$  of 180 V DC per pole
- Width 2 and 4 modules
- Tripping characteristics K
- Rated current up to 63A
- Wide range of accessories

DC miniature circuit breakers Ex9BP are designed for direct current applications. Thanks to their polarity independency are suitable for photovoltaic applications.

It can be combined with wide range of accessories including auxiliary and signal contacts, shunt trip release and undervoltage release. It is possible to create diversified combination of accessories. These combinations are only limited by total number, not by the type of accessories - all components fit together. It can be used up to three units of auxiliary or alarm contacts plus up to two units for release units.

## Type Key



## Certification marks



# DC MCBs Ex9BP up to 720 V DC

## Accessories



Aux. or signal contacts  
**AX, AL, AXL**  
Up to 3 units

Voltage or trip releases  
**SHT, UVT**  
Up to 2 units

Miniature Circuit Breaker  
**Ex9BP**  
2, 4-module width

Auxiliary contacts AX31

Alarm contact AL3

Auxiliary and alarm contact AXL31

Shunt trip releases SHT31

Undervoltage releases UVT31

see installation devices catalogue

see installation devices catalogue

see installation devices catalogue

see installation devices catalogue

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All accessories are mounted to the MCBs Ex9BP from the left. The undervoltage release UVT in PV system is intended e.g. for safe remote disconnection of DC part from installation.

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## K-Characteristic, 2-module, 360 V DC



Rated current	Pole	Char.	Part no.	Model	Packing
1A	2	K	84444	Ex9BP 2P DC360V K1 IEC	1/6/72
2A	2	K	84445	Ex9BP 2P DC360V K2 IEC	1/6/72
3A	2	K	84446	Ex9BP 2P DC360V K3 IEC	1/6/72
4A	2	K	84447	Ex9BP 2P DC360V K4 IEC	1/6/72
6A	2	K	84448	Ex9BP 2P DC360V K6 IEC	1/6/72
10A	2	K	84449	Ex9BP 2P DC360V K10 IEC	1/6/72
16A	2	K	84450	Ex9BP 2P DC360V K16 IEC	1/6/72
20A	2	K	84451	Ex9BP 2P DC360V K20 IEC	1/6/72
25A	2	K	84452	Ex9BP 2P DC360V K25 IEC	1/6/72
32A	2	K	84453	Ex9BP 2P DC360V K32 IEC	1/6/72
40A	2	K	84454	Ex9BP 2P DC360V K40 IEC	1/6/72
50A	2	K	84455	Ex9BP 2P DC360V K50 IEC	1/6/72
63A	2	K	84456	Ex9BP 2P DC360V K63 IEC	1/6/72

## K-Characteristic, 4-module, 720 V DC



Rated current	Pole	Char.	Part no.	Model	Packing
1A	4	K	84470	Ex9BP 4P DC720V K1 IEC	1/3/36
2A	4	K	84471	Ex9BP 4P DC720V K2 IEC	1/3/36
3A	4	K	84472	Ex9BP 4P DC720V K3 IEC	1/3/36
4A	4	K	84473	Ex9BP 4P DC720V K4 IEC	1/3/36
6A	4	K	84474	Ex9BP 4P DC720V K6 IEC	1/3/36
10A	4	K	84475	Ex9BP 4P DC720V K10 IEC	1/3/36
16A	4	K	84476	Ex9BP 4P DC720V K16 IEC	1/3/36
20A	4	K	84477	Ex9BP 4P DC720V K20 IEC	1/3/36
25A	4	K	84478	Ex9BP 4P DC720V K25 IEC	1/3/36
32A	4	K	84479	Ex9BP 4P DC720V K32 IEC	1/3/36
40A	4	K	84480	Ex9BP 4P DC720V K40 IEC	1/3/36
50A	4	K	84481	Ex9BP 4P DC720V K50 IEC	1/3/36
63A	4	K	84482	Ex9BP 4P DC720V K63 IEC	1/3/36

# Technical Data Ex9BP up to 720 V DC

## DC Miniature Circuit Breakers up to 720 V DC

### General parameters

Non-polarized, suitable for general DC as well as Photovoltaic applications

#### Accessories

Auxiliary contacts	AX3111, AX3122	
Alarm contact	AL3111	
Auxiliary and alarm contact	AXL31	
Shunt trip releases	SHT31, SHT3111	
Undervoltage releases	UVT31, UVT3101, UVT3110	
Max. number of installed accessories is 3 pcs of one contact units (AX3111, AL3111) or 2 pcs of two contact units (AX3122, AXL31) and 2 pcs of releases (SHT31, UVT31)		

### Electrical parameters

Tested according to	IEC/EN 60947-2
Rated operating voltage $U_e$	360 (2P), 720 (4P) V DC
Rated breaking capacity $I_{cu}$	10 kA
Rated current $I_n$	1 — 63 A
Tripping characteristics	K
Rated impulse withstand voltage $U_{imp}$	4 kV (2P), 6 kV (4P)
Rated insulation voltage $U_i$	1 000 V DC
Electrical service life	300 operation cycles
Line voltage connection	arbitrary above or below

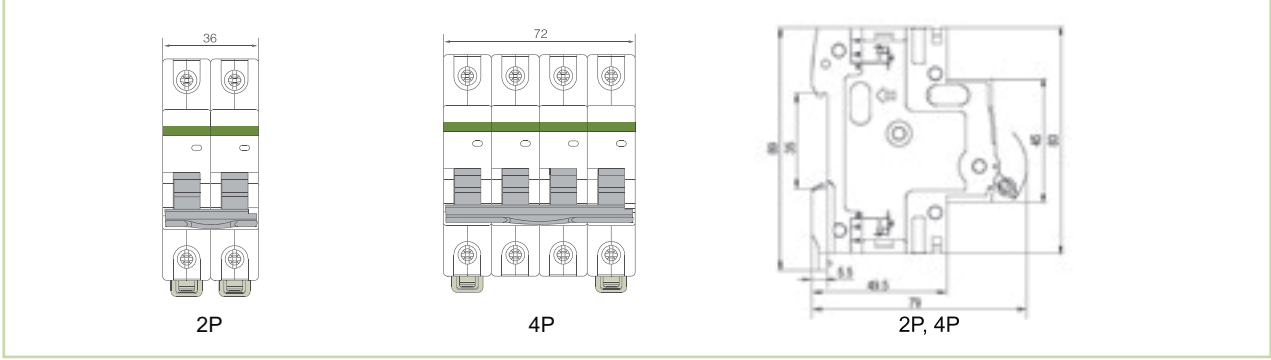
### Mechanical parameters

Device width	18 mm (per pole/module)
Device height	83 mm (89 mm including rail clip)
Frame size	45 mm
Mounting	easy fastening onto 35 mm device rail (DIN)
Degree of protection	IP20 terminals
Terminals	combined lift + open mouthed
Terminal capacity	1 — 35 mm <sup>2</sup>
Fastening torque of terminals	3.5 Nm
Busbar thickness	0.8 — 2 mm
Mechanical service life	20 000 operation cycles
Ambient temperature	-35 — +70 °C
Altitude	≤ 2 000 m
Relative humidity	≤ 95 % at 20°C, ≤ 50 % at 40°C
Resistance to humidity and heat	class 2
Pollution degree	3
Installation class	III
Weight	0.12 kg (per pole/module)

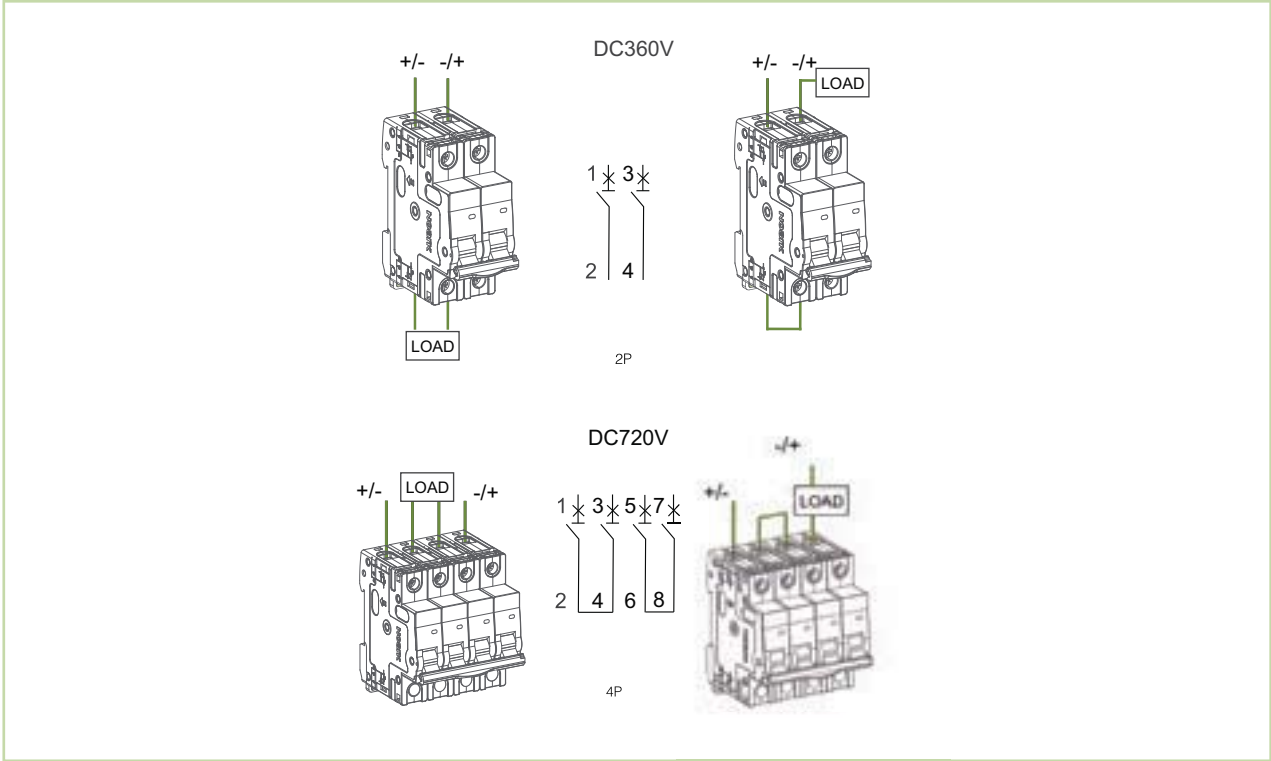
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## DC Miniature Circuit Breakers up to 720 V DC

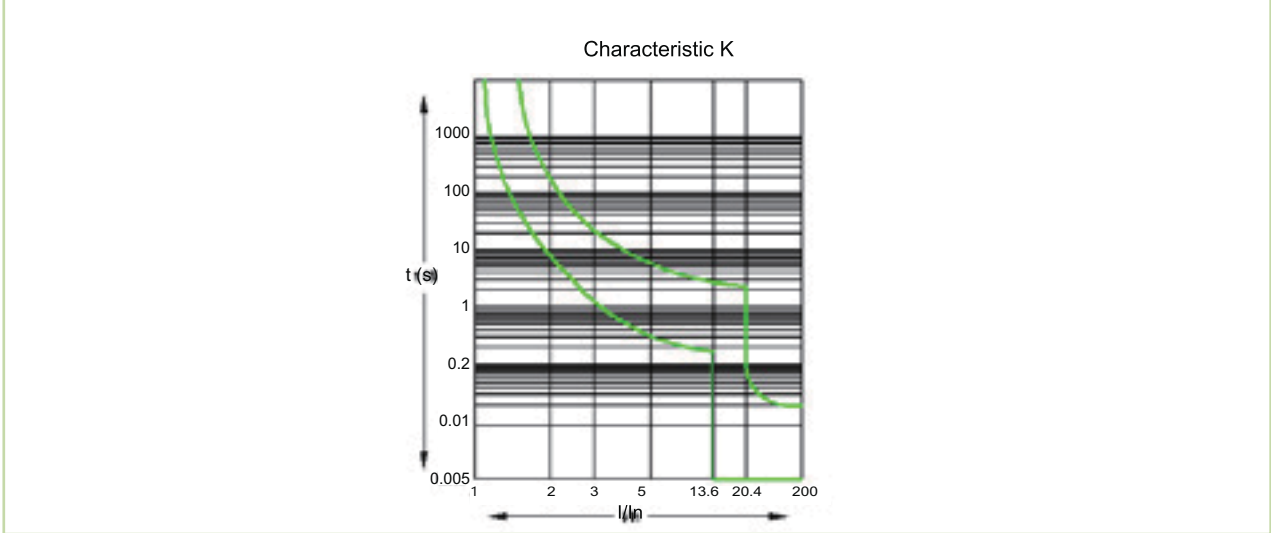
### Dimensions



### Wiring diagrams



### Tripping characteristics



# Technical Data Ex9BP up to 720 V DC

## DC Miniature Circuit Breakers up to 720 V DC

### Dependence of tripping characteristics on ambient temperature

T [°C]	I <sub>n</sub> (T) [A]								
	10	13	16	20	25	32	40	50	63
-30	13	16.1	20	24.8	30.8	39.7	49.6	62.5	80.8
-25	12.8	15.7	19.7	24.4	30.3	39	48.8	61.5	78.8
-20	12.6	15.6	19.4	24	29.8	38.4	48	60.5	77
-15	12.4	15.3	19	23.6	29.3	37.8	47.2	59	75.3
-10	12.1	15.1	18.6	23.2	28.8	37.1	46.4	58	73.7
-5	12	15	18.4	23	28.5	36.8	46	57.5	72.2
0	11.7	14.6	18.1	22.6	28	36.2	45.2	56.5	70.7
5	11.4	14.4	17.8	22.2	27.5	35.2	44.4	55.5	69.3
10	11.1	14	17.4	21.6	27	34.6	43.6	54.5	68
15	10.8	13.8	17	21.2	26.5	33.9	42.4	53	66.8
20	10.6	13.7	16.8	21	26	33.6	42	52.5	65.8
25	10.4	13.5	16.5	20.6	25.8	33	41.2	51.5	65
30	10.2	13.3	16.3	20.4	25.5	32.6	40.8	51	64.2
35	10.2	13.1	16.3	20.4	25.5	32.6	40.4	50.5	63.6
40	10	13	16	20	25	32	40	50	63
45	9.8	12.7	15.7	19.6	24.4	31.3	39	48.6	61.1
50	9.56	12.4	15.2	19.1	23.7	30.4	37.8	47	58.9
55	9.26	12	14.8	18.4	22.9	29.4	36.4	45.2	56.4
60	8.92	11.5	14.2	17.7	22	28.2	34.8	43	53.6
65	8.52	10.9	13.5	16.9	20.9	26.9	33	40.7	50.4
70	8.08	10.3	12.8	16	19.7	25.4	31	38	47

### Power loss per pole

I <sub>n</sub> [A]	10 A	13 A	16 A	20 A	25 A	32 A	40 A	50 A	63 A
P [W]	1.8	3.1	3.1	3.1	3.9	3.9	4.7	4.7	6.2