DC MCBs Ex9BP up to 1000 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} 6 kA**
- **Rated operating voltage U_e of 250 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 aplications.

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 diversed 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

Ex9	BP	4P	DC1000V	K	32
Product family	Product	Poles	Rated voltage	Tripping curve	Rated current
Ex9	Non-polarized DC MCBs	2, 4	DC500V DC1000V	K	10 — 63 A

Certification marks

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Accessories

Auxiliary contacts AX31	see installation devices catalogue
Alarm contact AL3	see installation devices catalogue
Auxiliary and alarm contact AXL31	see installation devices catalogue
Shunt trip releases SHT31	see installation devices catalogue
Undervoltage releases UVT31	see installation devices catalogue

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, 500 V DC

Rated current	Width	Char.	Article No.	Type	Packing
10A	2MU	K	90118	Ex9BP 2P DC500V K10	1/6/72
13A	2MU	K	90119	Ex9BP 2P DC500V K13	1/6/72
16A	2MU	K	90120	Ex9BP 2P DC500V K16	1/6/72
20A	2MU	K	90121	Ex9BP 2P DC500V K20	1/6/72
25A	2MU	K	90122	Ex9BP 2P DC500V K25	1/6/72
32A	2MU	K	90123	Ex9BP 2P DC500V K32	1/6/72
40A	2MU	K	90124	Ex9BP 2P DC500V K40	1/6/72
50A	2MU	K	90125	Ex9BP 2P DC500V K50	1/6/72
63A	2MU	K	90126	Ex9BP 2P DC500V K63	1/6/72

K-Characteristic, 4-module, 1000 V DC

Rated current	Width	Char.	Article No.	Type	Packing
10A	4MU	K	90127	Ex9BP 4P DC1000V K10	1/3/36
13A	4MU	K	90128	Ex9BP 4P DC1000V K13	1/3/36
16A	4MU	K	90129	Ex9BP 4P DC1000V K16	1/3/36
20A	4MU	K	90130	Ex9BP 4P DC1000V K20	1/3/36
25A	4MU	K	90131	Ex9BP 4P DC1000V K25	1/3/36
32A	4MU	K	90132	Ex9BP 4P DC1000V K32	1/3/36
40A	4MU	K	90133	Ex9BP 4P DC1000V K40	1/3/36
50A	4MU	K	90134	Ex9BP 4P DC1000V K50	1/3/36
63A	4MU	K	90135	Ex9BP 4P DC1000V K63	1/3/36

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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	500 (2P), 1000 (4P) V DC
Rated breaking capacity I_{cu}	6 kA
Rated current I_n	10 — 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^2
Fastening torque of terminals	3.5 Nm
Busbar thiskness	0.8 — 2 mm
Mechanical service life	20 000 operation cycles
Ambient temperature	-35 — +70 °C
Altitude	≤ 2 000 m
Relative humidity	≤ 95 % at 20ºC, ≤ 50 % at 40ºC
Resistance to humidity and heat	class 2
Pollution degree	3
Installation class	III
Weight	0.12 kg (per pole/module)

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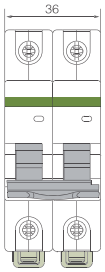
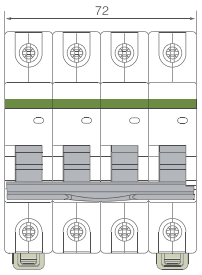
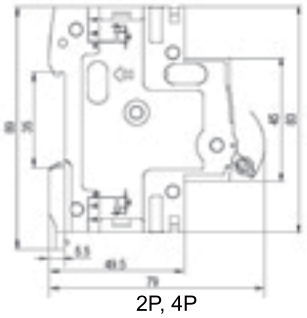
Dimensions



2P



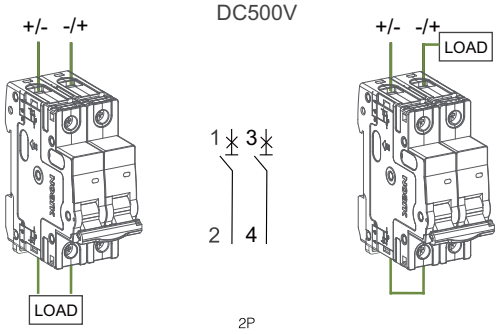
4P



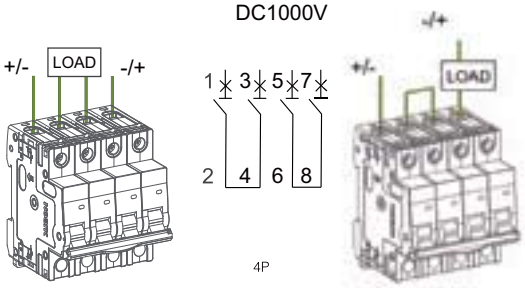
2P, 4P

Wiring diagrams

DC500V

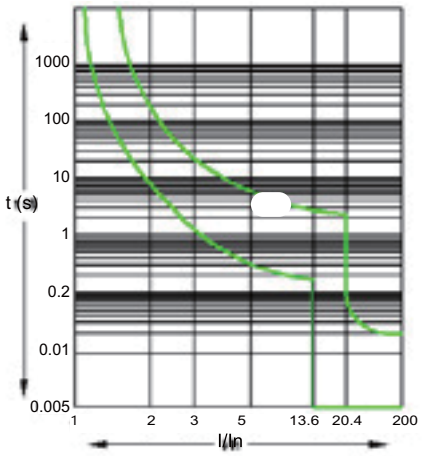


DC1000V



Tripping characteristics

Characteristic K



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Dependence of tripping characteristics on ambient temperature

T [°C]	I_n (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_n [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

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