

# DC Miniature Circuit Breakers Ex9BP

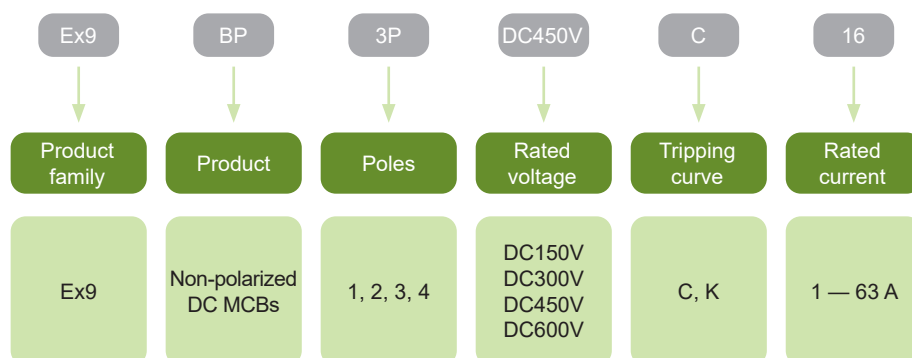


- DC Miniature Circuit Breakers
- Non-polarized, suitable for photovoltaic applications
- Tested according to IEC / EN 60947-2
- Rated short circuit breaking capacity  $I_{cu}$  10 kA
- Rated operating voltage  $U_e$  of 150 V DC per pole
- Width 1 up to 4 modules
- Tripping characteristics C, K
- Rated 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

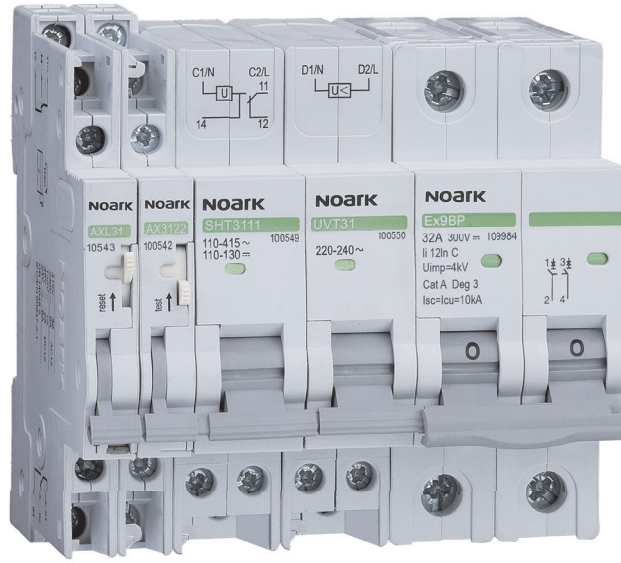


## Certification marks



# DC Miniature Circuit Breakers Ex9BP

## 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**  
1, 2, 3, 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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## C-Characteristic, 4-module, 600 V DC



Rated current	Width	Char.	Article No.	Type	Packing
1A	4 MU	C	110001	Ex9BP 4P DC600V C1	1/3/36
2A	4 MU	C	110002	Ex9BP 4P DC600V C2	1/3/36
3A	4 MU	C	110003	Ex9BP 4P DC600V C3	1/3/36
4A	4 MU	C	110004	Ex9BP 4P DC600V C4	1/3/36
6A	4 MU	C	110005	Ex9BP 4P DC600V C6	1/3/36
10 A	4 MU	C	110006	Ex9BP 4P DC600V C10	1/3/36
16 A	4 MU	C	110007	Ex9BP 4P DC600V C16	1/3/36
20 A	4 MU	C	110008	Ex9BP 4P DC600V C20	1/3/36
25 A	4 MU	C	110009	Ex9BP 4P DC600V C25	1/3/36
32 A	4 MU	C	110010	Ex9BP 4P DC600V C32	1/3/36
40 A	4 MU	C	110011	Ex9BP 4P DC600V C40	1/3/36
50 A	4 MU	C	110012	Ex9BP 4P DC600V C50	1/3/36
63 A	4 MU	C	110013	Ex9BP 4P DC600V C63	1/3/36

# Technical Data Ex9BP

## DC Miniature Circuit Breakers up to 63 A

### General parameters

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

#### Accessories

Auxiliary contacts	AX3111, AX3122	100540, 100542
Alarm contact	AL3111	100541
Auxiliary and alarm contact	AXL31	100543
Shunt trip releases	SHT31, SHT3111	100544-100546, 100547-100549
Undervoltage releases	UVT31, UVT3101, UVT3110	100550-100551, 100552-100553, 100554-100555
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 $U_e$	150 (1P), 300 (2P), 450 (3P), 600 (4P) V DC
Rated breaking capacity $I_{cu}$	10 kA
Rated current $I_n$	1 — 63 A
Tripping characteristics	C, K
Rated impulse withstand voltage $U_{imp}$	4 kV
Rated insulation voltage $U_i$	1 000 V DC
Mechanical service life	20 000 operation cycles
Electrical service life	2 500 operation cycles
Line voltage connection	arbitrary above or below

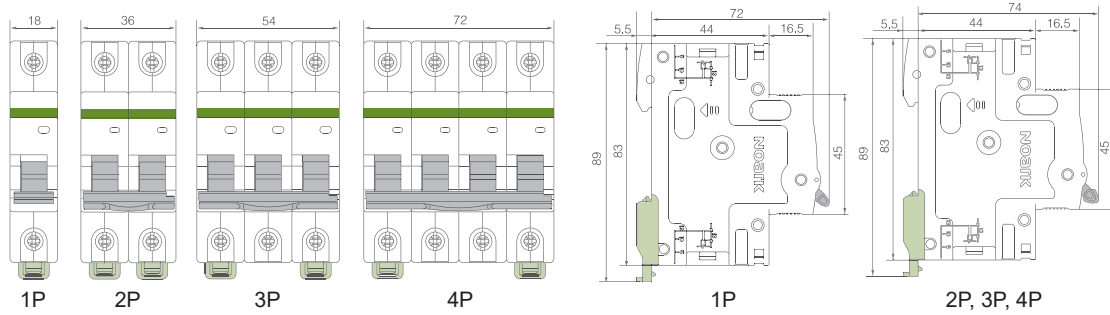
### Mechanical parameters

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	IP40, 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
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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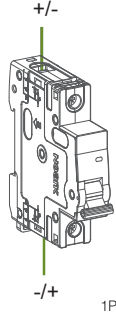
## DC Miniature Circuit Breakers up to 63 A

### Dimensions



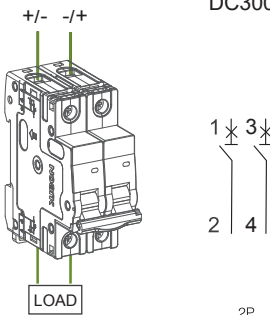
### Wiring diagrams

DC150



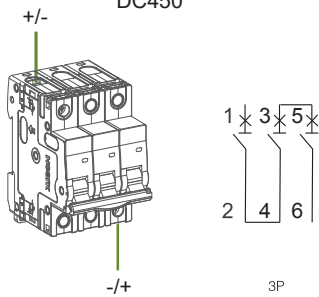
1P

DC300



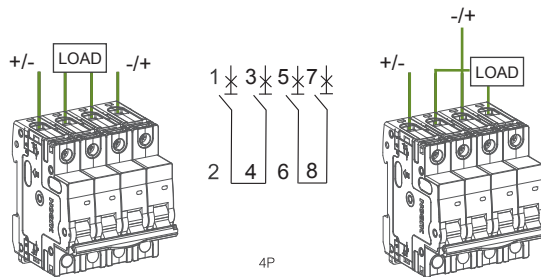
2P

DC450



3P

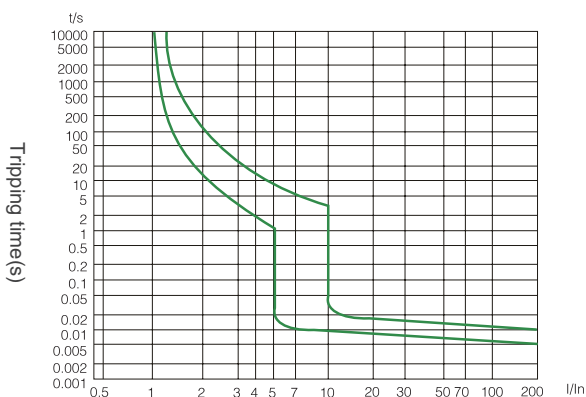
DC600



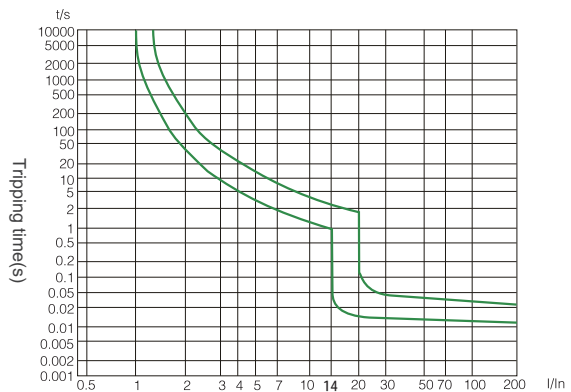
4P

### Tripping characteristics

Characteristic C



Characteristic K



# Technical Data Ex9BP

## DC Miniature Circuit Breakers up to 63 A

### Dependence of tripping characteristics on ambient temperature

T [°C]	I <sub>n</sub> (T) [A]												
	1A	2A	3A	4A	6A	10 A	16 A	20 A	25 A	32 A	40 A	50 A	63 A
-20	1.2	2.4	3.6	4.8	7.3	13.5	20.0	24.5	29.8	39.5	50.5	60.0	77.5
-15	1.2	2.4	3.5	4.8	7.2	13.3	19.8	24.3	29.7	39.3	50.4	59.8	76.3
-10	1.2	2.3	3.5	4.7	7.1	13.0	19.5	24.0	29.5	39.0	50.2	59.5	75.0
-5	1.2	2.3	3.4	4.7	7	12.7	19.2	23.8	29.3	38.8	50.0	59.2	73.0
0	1.1	2.2	3.4	4.5	6.8	12.5	19.1	23.7	29.2	38.6	48.8	59.0	71.8
5	1.1	2.2	3.3	4.4	6.6	12.3	18.8	23.5	29.0	38.4	48.6	58.8	70.6
10	1.1	2.1	3.3	4.3	6.5	12.1	18.6	23.3	28.8	38.2	48.4	56.5	69.0
15	1.1	2.1	3.2	4.3	6.4	12.0	18.5	23.1	28.6	38.0	48.1	55.0	67.5
20	1	2.1	3.2	4.2	6.3	11.8	18.3	22.8	28.4	37.8	47.8	54.5	66.2
25	1	2	3	4.1	6.2	11.5	18.0	22.6	28.2	37.5	47.0	52.5	64.5
30	1	2	3	4	6	10	16	20	25	32	40	50	63
35	0.99	2	3	3.9	5.9	9.9	15.7	19.7	24.6	31.5	39.2	48.8	61.5
40	0.97	1.9	2.9	3.9	5.8	9.8	15.4	19.3	24.3	31.1	38.8	47.0	58.7
45	0.95	1.9	2.8	3.8	5.7	9.8	15.1	18.8	24.0	30.8	38.3	45.5	55.8
50	0.93	1.9	2.8	3.7	5.6	9.6	14.9	18.5	23.8	30.1	38.0	44.0	53.5
55	0.91	1.8	2.8	3.6	5.5	9.5	14.7	18.2	23.5	29.5	36.5	42.5	51.7
60	0.91	1.8	2.7	3.5	5.4	9.0	14.5	17.8	23.0	28.5	35.0	41.5	49.2
65	0.91	1.8	2.7	3.5	5.3	8.6	14.0	17.5	22.0	27.5	34.0	40.5	47.9
70	0.91	1.8	2.7	3.5	5.3	8.0	13.8	17.3	21.5	27.0	32.5	38.0	46.8

### Power loss per pole

I <sub>n</sub> [A]	1 A	2 A	3 A	4 A	6 A	10 A	16 A	20 A	25 A	32 A	40 A	50 A	63 A
P [W]	1.5	2.0	1.8	2.0	2.2	1.5	1.8	2.0	2.2	2.6	2.9	3.8	4.4