

DC Miniature Circuit Breakers Ex9BP

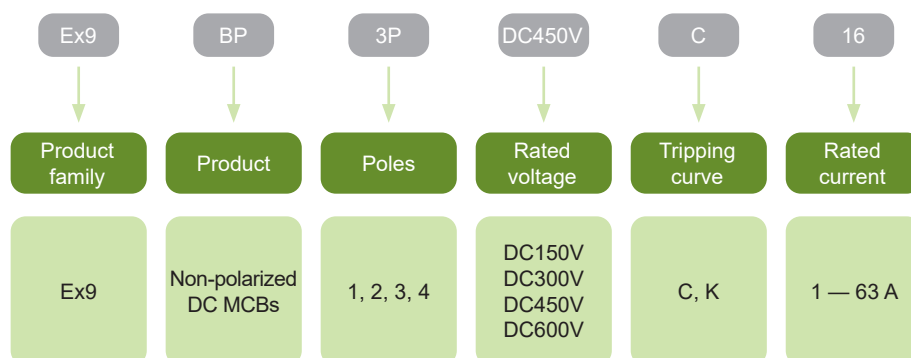


- DC Miniature Circuit Breakers
- Non-polarized, suitable for photovoltaic applications
- Tested according to IEC / EN 60947-2
- Rated short circuit breaking capacity I_{cu} 10 kA
- Rated operating voltage U_e of 150 V DC per pole
- Width 1 up to 4 modules
- Tripping characteristics C, K
- Rated current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

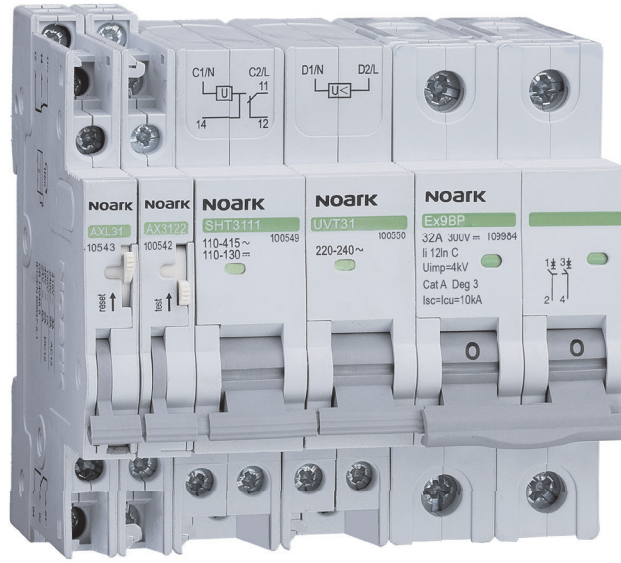


Certification marks



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

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.

DC Miniature Circuit Breakers Ex9BP

C-Characteristic, 1-pole, 150 V DC



Rated current	Width	Char.	Article No.	Type	Packing
1A	1 MU	C	109962	Ex9BP 1P DC150V C1	1/12/144
2A	1 MU	C	109963	Ex9BP 1P DC150V C2	1/12/144
3A	1 MU	C	109964	Ex9BP 1P DC150V C3	1/12/144
4A	1 MU	C	109965	Ex9BP 1P DC150V C4	1/12/144
6A	1 MU	C	109966	Ex9BP 1P DC150V C6	1/12/144
10 A	1 MU	C	109967	Ex9BP 1P DC150V C10	1/12/144
16 A	1 MU	C	109968	Ex9BP 1P DC150V C16	1/12/144
20 A	1 MU	C	109969	Ex9BP 1P DC150V C20	1/12/144
25 A	1 MU	C	109970	Ex9BP 1P DC150V C25	1/12/144
32 A	1 MU	C	109971	Ex9BP 1P DC150V C32	1/12/144
40 A	1 MU	C	109972	Ex9BP 1P DC150V C40	1/12/144
50 A	1 MU	C	109973	Ex9BP 1P DC150V C50	1/12/144
63 A	1 MU	C	109974	Ex9BP 1P DC150V C63	1/12/144

C-Characteristic, 2-pole, 300 V DC



Rated current	Width	Char.	Article No.	Type	Packing
1A	2 MU	C	109975	Ex9BP 2P DC300V C1	1/6/72
2A	2 MU	C	109976	Ex9BP 2P DC300V C2	1/6/72
3A	2 MU	C	109977	Ex9BP 2P DC300V C3	1/6/72
4A	2 MU	C	109978	Ex9BP 2P DC300V C4	1/6/72
6A	2 MU	C	109979	Ex9BP 2P DC300V C6	1/6/72
10 A	2 MU	C	109980	Ex9BP 2P DC300V C10	1/6/72
16 A	2 MU	C	109981	Ex9BP 2P DC300V C16	1/6/72
20 A	2 MU	C	109982	Ex9BP 2P DC300V C20	1/6/72
25 A	2 MU	C	109983	Ex9BP 2P DC300V C25	1/6/72
32 A	2 MU	C	109984	Ex9BP 2P DC300V C32	1/6/72
40 A	2 MU	C	109985	Ex9BP 2P DC300V C40	1/6/72
50 A	2 MU	C	109986	Ex9BP 2P DC300V C50	1/6/72
63 A	2 MU	C	109987	Ex9BP 2P DC300V C63	1/6/72

C-Characteristic, 3-module, 450 V DC



Rated current	Width	Char.	Article No.	Type	Packing
1A	3 MU	C	109988	Ex9BP 3P DC450V C1	1/4/48
2A	3 MU	C	109989	Ex9BP 3P DC450V C2	1/4/48
3A	3 MU	C	109990	Ex9BP 3P DC450V C3	1/4/48
4A	3 MU	C	109991	Ex9BP 3P DC450V C4	1/4/48
6A	3 MU	C	109992	Ex9BP 3P DC450V C6	1/4/48
10 A	3 MU	C	109993	Ex9BP 3P DC450V C10	1/4/48
16 A	3 MU	C	109994	Ex9BP 3P DC450V C16	1/4/48
20 A	3 MU	C	109995	Ex9BP 3P DC450V C20	1/4/48
25 A	3 MU	C	109996	Ex9BP 3P DC450V C25	1/4/48
32 A	3 MU	C	109997	Ex9BP 3P DC450V C32	1/4/48
40 A	3 MU	C	109998	Ex9BP 3P DC450V C40	1/4/48
50 A	3 MU	C	109999	Ex9BP 3P DC450V C50	1/4/48
63 A	3 MU	C	110000	Ex9BP 3P DC450V C63	1/4/48

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

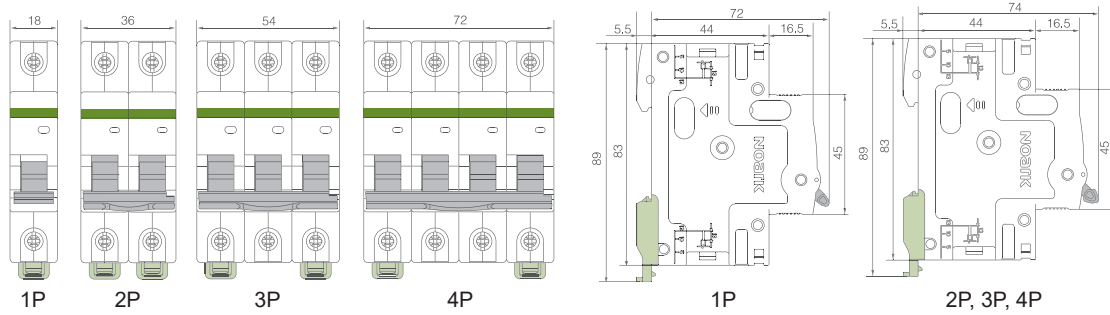
Mechanical parameters

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 ²
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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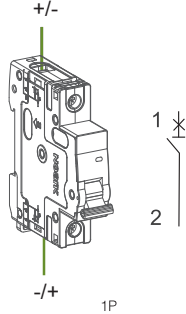
DC Miniature Circuit Breakers up to 63 A

Dimensions

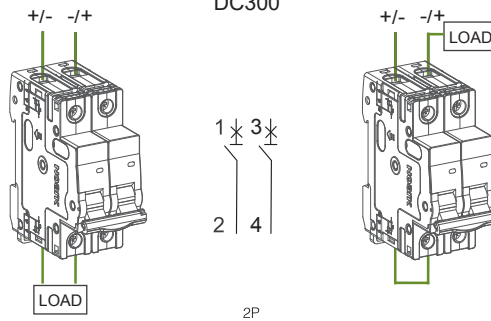


Wiring diagrams

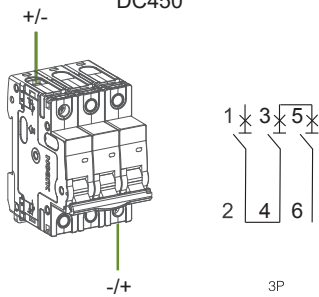
DC150



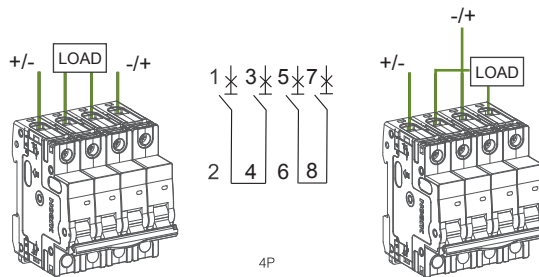
DC300



DC450

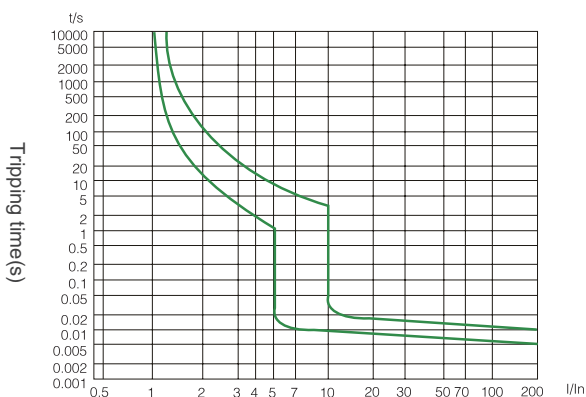


DC600

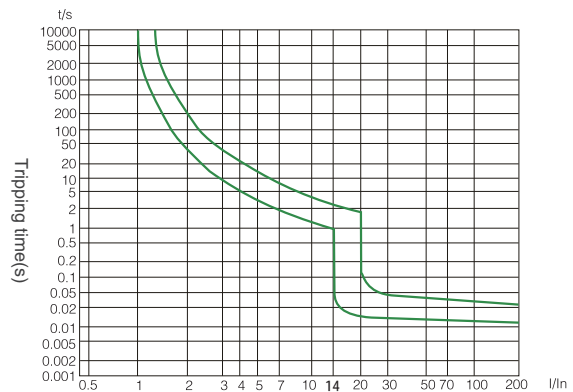


Tripping characteristics

Characteristic C



Characteristic K



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DC Miniature Circuit Breakers up to 63 A

Dependence of tripping characteristics on ambient temperature

T [°C]	I _n (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 _n [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