

DC MCCB Switch Disconnectors Ex9MSD

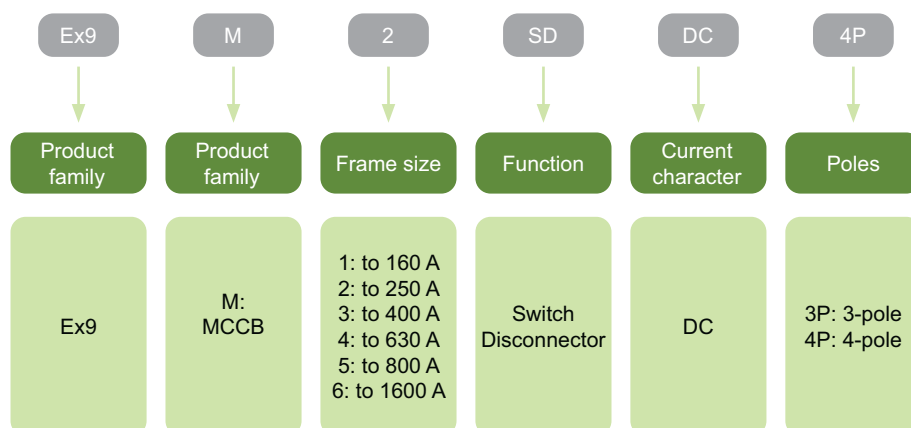


- DC MCCB Switch Disconnectors
- Frame sizes M1-M6
- Rated operating current up to 1600 A
- Tested according to EN 60947-3
- DC current character
- 3 and 4-pole versions
- Rated voltage 750 V DC (3-pole) and 1000 V DC (4-pole)

DC versions of MCCB based Switch Disconnectors Ex9MSD are used as a main switch in DC applications, such as PV installations. Testing according to IEC / EN 60947-3 standards ensures functions and reliability for wide variety of applications.

These switch disconnectors follows the same design pattern than their circuit breaker equivalents. Therefore there is possibility to use the fully compatible range of external and internal accessories including extended rotary handles, auxiliary contacts, tripping units and many others.

Type Key

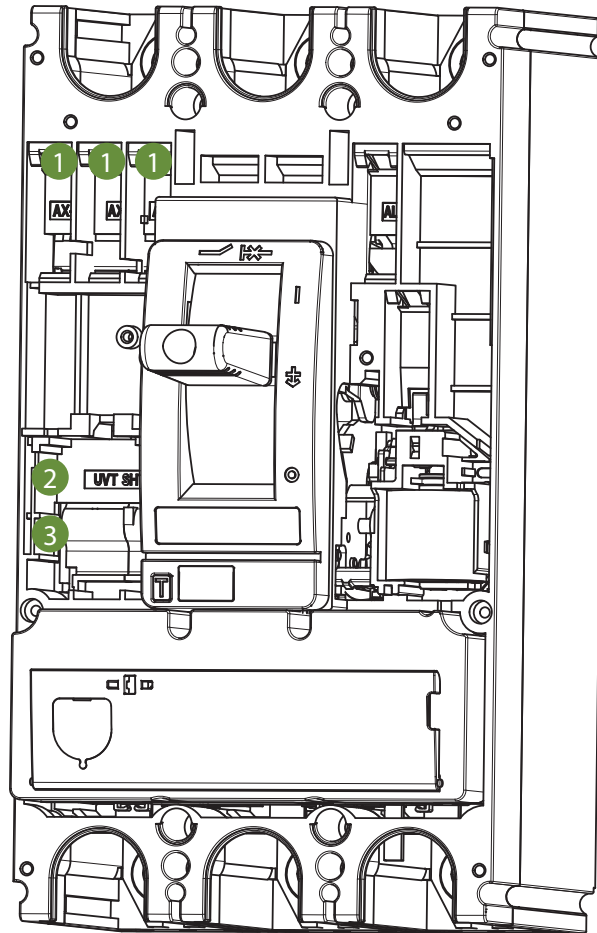


Certification marks



DC MCCB Switch Disconnectors Ex9MSD

Internal accessories Ex9M1-M5 DC SD



1

Auxiliary contact
AX21M

2

Shunt trip release
SHT2*i*
1 unit or UVT2*i*

3

Undervoltage release
UVT2*i*
1 unit or SHT2*i*

Auxiliary contact AX21M

Shunt trip releases SHT2*i*

Undervoltage releases UVT2*i*

see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

All internal accessories for frame sizes M2 and M3 as well as M4 and M5 are the same.

DC MCCB Switch Disconnectors Ex9MSD

External accessories Ex9M1-M5 DC SD



Phase barriers
PB2i



Terminal cover set, short
TCV2i



Terminal cover set, long
TCE2i



Remote operator
MOD2i



Direct rotary handle
RHD2i



Extended rotary handle
ERH2i

Phase barriers PHS2i

Terminal cover, short TCV2i

Remote operators MOD2i

Extended rotary handles ERH2i

Terminal cover, long TCE2i

Direct rotary handles RHD2i

see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

DC MCCB Switch Disconnectors Ex9MSD

External accessories Ex9M1-M5 DC SD



Tunnel terminals
MC2i W



Mounting depth spacers
WG i



Screw type terminals
MC2i



Screw terminals
MCS2i



Din rail adapter
DRA2i

Tunnel terminals *MC2i W*

Mounting depth spacers *WG i*

Screw type terminals *MC2i*

Screw terminals *MCS2i*

Din rail *DRA2i*

see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

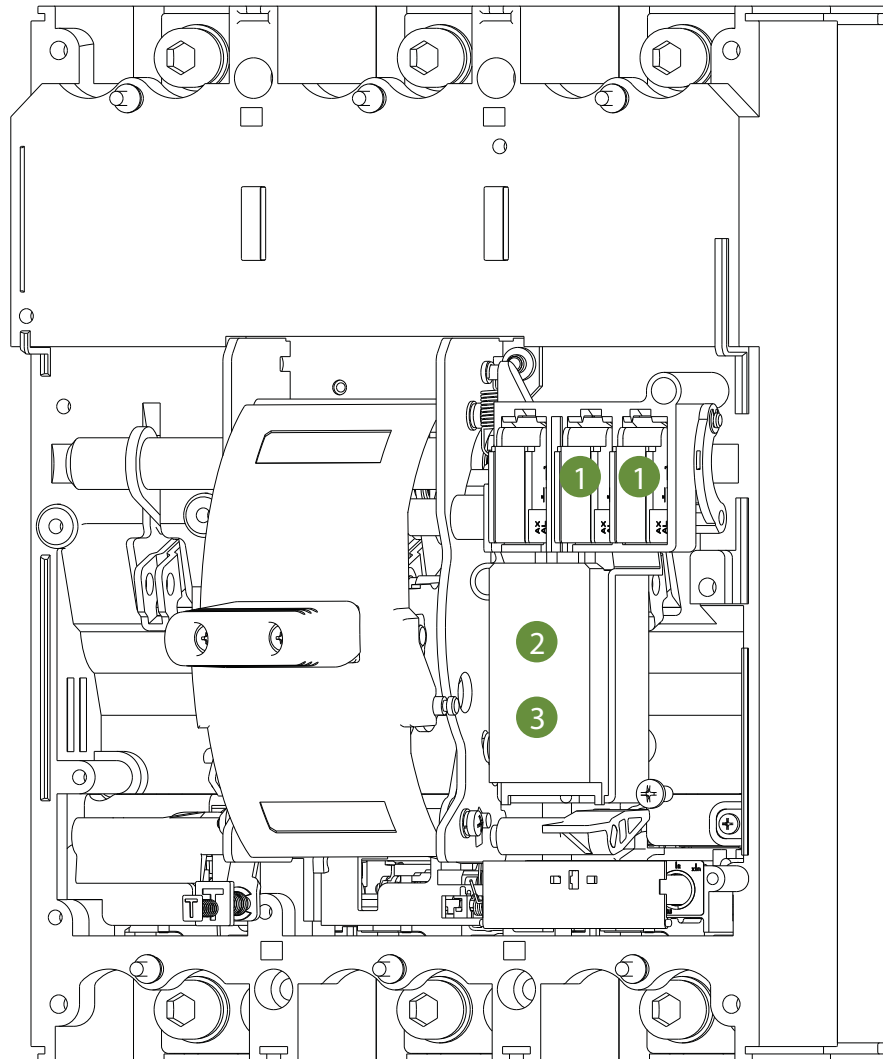
see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

DC MCCB Switch Disconnectors Ex9M6SD

Internal accessories Ex9M6 DC SD



1

Auxiliary contact
AX21M

2

Shunt trip release
SHT26
1 unit or UVT2i

3

Undervoltage release
UVT26
1 unit or SHT2i

Auxiliary contact AX21M

Shunt trip releases SHT26

Undervoltage releases UVT26

see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

see Moulded Case Circuit Breakers catalogue

DC MCCB Switch Disconnectors Ex9M6SD

External accessories Ex9M6 DC SD



Extended rotatory
handle
ERH26



Extended handle
LHD26



Front connection
plate
JP26

Extended rotatory handles ERH26

Extended handles LHD26

Front connection plate JP26

see Installation devices catalogue

see Installation devices catalogue

see Installation devices catalogue

DC MCCB Switch Disconnectors Ex9MSD

3-pole versions

- Mounting screws, screw type terminals as well as phase barriers in the scope of delivery



Rated current i_n	Frame size	Part no.	Model	Packing
160A	M1	852839	Ex9M1SD 3P IEC	1/12
250A	M2	852843	Ex9M2SD 3P IEC	1/8
400A	M3	852847	Ex9M3SD 3P IEC	1/2
630A	M4	852851	Ex9M4SD 3P IEC	1/1
800A	M5	852855	Ex9M5SD 3P IEC	1/1
800A	M6	852871	Ex9M6SD DC800 3P IEC	1/1
1000A	M6	852865	Ex9M6SD DC1000 3P IEC	1/1
1250A	M6	852867	Ex9M6SD DC1250 3P IEC	1/1
1600A	M6	852869	Ex9M6SD DC1600 3P IEC	1/1

4-pole versions

- Mounting screws, screw type terminals as well as phase barriers in the scope of delivery



Rated current i_n	Frame size	Part no.	Model	Packing
160A	M1	852840	Ex9M1SD 4P	1/12
250A	M2	852844	Ex9M2SD 4P	1/8
400A	M3	852848	Ex9M3SD 4P	1/2
630A	M4	852852	Ex9M4SD 4P	1/1
800A	M5	852856	Ex9M5SD 4P	1/1
800A	M6	852872	Ex9M6SD DC800 4P IEC	1/1
1000A	M6	852866	Ex9M6SD DC1000 4P IEC	1/1
1250A	M6	852868	Ex9M6SD DC1250 4P IEC	1/1
1600A	M6	852870	Ex9M6SD DC1600 4P IEC	1/1

Technical Data Ex9M1 ACDC SD

DC Moulded Case Switch Disconnectors up to 160 A

Electrical parameters

Tested according to	IEC/EN 60947-3
Rated op. voltage U_e	750 / 1 000 V DC
Rated insulation voltage U_i	1 000 V
Rated impulse withstand voltage U_{imp}	8 kV
Rated frequency	DC
Rated short-time making capacity I_{cm}	2 kA
Rated short-time withstand current I_{cw}	2 kA / 1 s 2 kA / 3 s
Rated current	160 A
Utilization category	DC-22A, DC-23A, DC-PV2
Mechanical service life	15 000 operation cycles
Electrical service life	2 000 operation cycles / 1 000 V DC
Total disconnection time at short circuit	< 2 ms
Line voltage connection	arbitrary above or below

Power dissipation characteristics

I_n	160 A
Pole resistance (m Ω)	0.8
Pole power dissipation (W)	20.5

Mechanical parameters

Device width 3P / 4P	90 mm / 120 mm
Device height	140 mm
Device depth	81.6 mm
Mounting	onto panel
Degree of protection	IP40, IP20 terminals
Terminals	box
Terminal capacity	4 — 95 mm ²
Fastening torque of terminals	8 Nm
Ambient temperature	-40 — +70 °C
Relative humidity	≤ 50 % at 40 °C, ≤ 90 % monthly average
Pollution degree	3
Weight 3P / 4P	1.05 kg / 1.55 kg
Mounting position	vertical, can be rotated by 90° in each axis

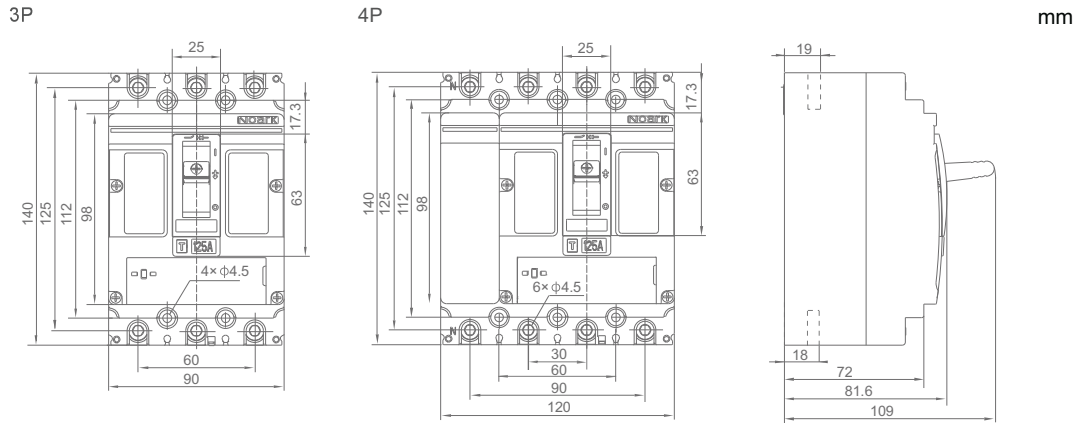
Derating coefficient of technical parameters based on altitude

Altitude	≤ 2 000 m	3 000 m	4 000 m	5 000 m
Derating op. current I_n coefficient	1	0.96	0.93	0.9
Maximum rated op. voltage U_e	1 000 V DC	900 V DC	850 V DC	800 V DC
Rated insulation voltage U_i	1 000 V DC	930 V DC	870 V DC	800 V DC
Rated impulse withstand voltage U_{imp}	8 kV	8 kV	8 kV	8 kV
Dielectric properties ($U_{imp}=8$ kV)	3 110 V DC	2 892 V DC	2 705 V DC	2 488 V DC

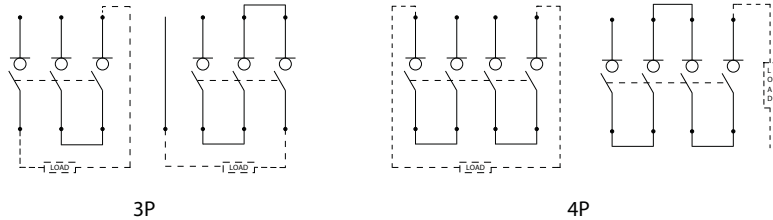
Technical Data Ex9M1SD DC

DC Moulded Case Switch Disconnectors up to 160 A

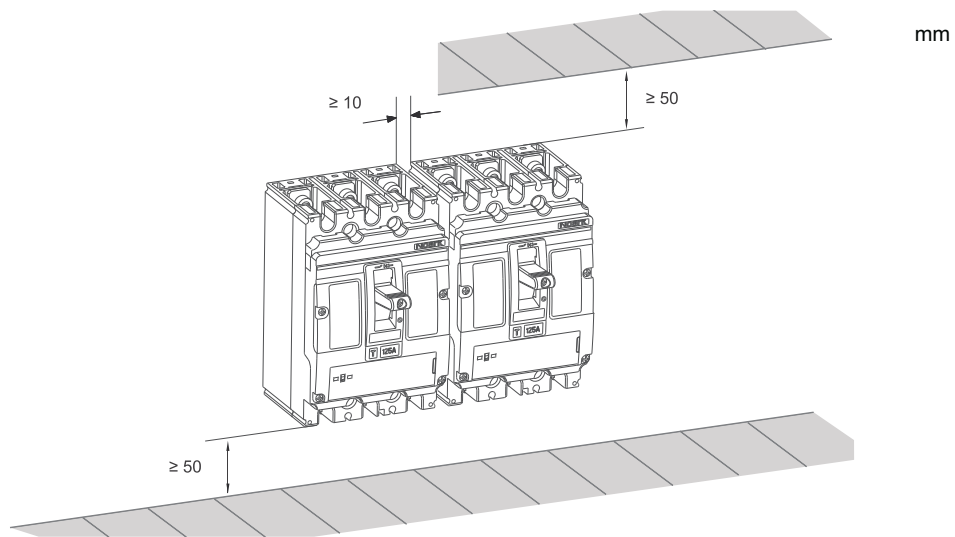
Dimensions



Wiring diagram



Installation space



Technical Data Ex9M2SD DC

DC Moulded Case Switch Disconnectors up to 250 A

Electrical parameters

Tested according to	IEC/EN 60947-3
Rated op. voltage U_e	750 / 1 000 V DC
Rated insulation voltage U_i	1 000 V
Rated impulse withstand voltage U_{imp}	8 kV
Rated frequency	DC
Rated short-time making capacity I_{cm}	3.2 kA
Rated short-time withstand current I_{cw}	3.2 kA / 1 s 3.2 kA / 3 s
Rated current	250 A
Utilization category	DC-22A, DC-23A, DC-PV2
Mechanical service life	15 000 operation cycles
Electrical service life	1 500 operation cycles / 1 000 V DC
Total disconnection time at short circuit	< 2 ms
Line voltage connection	arbitrary above or below

Power dissipation characteristics

I_n	250 A
Pole resistance (m Ω)	0.4
Pole power dissipation (W)	25

Mechanical parameters

Device width 3P / 4P	105 mm / 140 mm
Device height	157 mm
Device depth	96.5 mm
Mounting	onto panel
Degree of protection	IP40, IP20 terminals
Terminals	box
Terminal capacity	10 — 120 mm ²
Fastening torque of terminals	25 Nm
Ambient temperature	-40 — +70 °C
Relative humidity	≤ 50 % at 40 °C, ≤ 90 % monthly average
Pollution degree	3
Weight 3P / 4P	1.85 kg / 2.5 kg
Mounting position	vertical, can be rotated by 90° in each axis

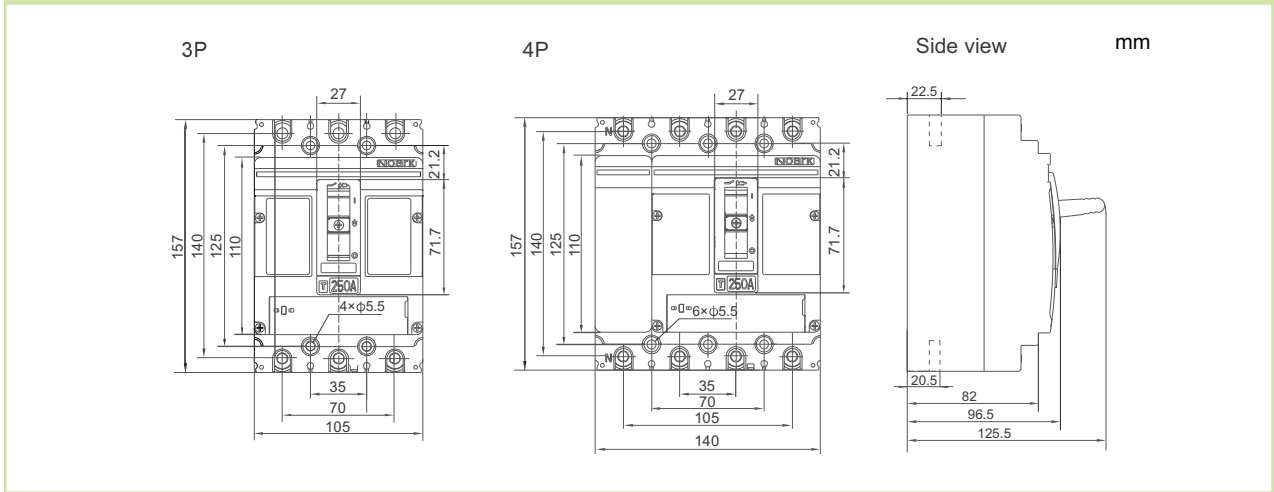
Derating coefficient of technical parameters based on altitude

Altitude	≤ 2 000 m	3 000 m	4 000 m	5 000 m
Derating op. current I_n coefficient	1	0.96	0.93	0.9
Maximum rated op. voltage U_e	1 000 V DC	900 V DC	850 V DC	800 V DC
Rated insulation voltage U_i	1 000 V DC	930 V DC	870 V DC	800 V DC
Rated impulse withstand voltage U_{imp}	8 kV	8 kV	8 kV	8 kV
Dielectric properties ($U_{imp}=8$ kV)	3 110 V DC	2 892 V DC	2 705 V DC	2 488 V DC

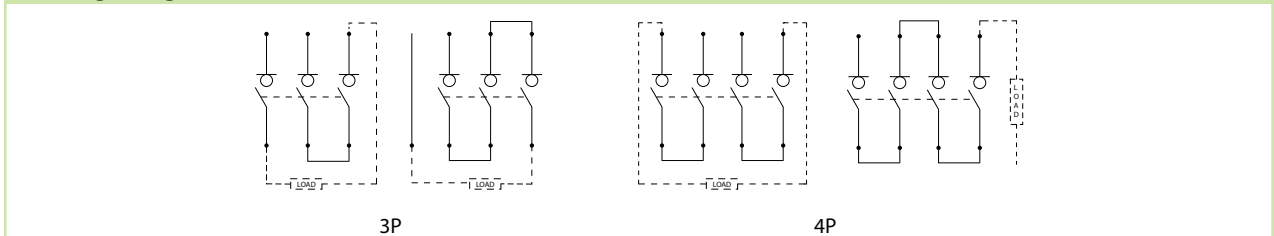
Technical Data Ex9M2SD DC

DC Moulded Case Switch Disconnectors up to 250 A

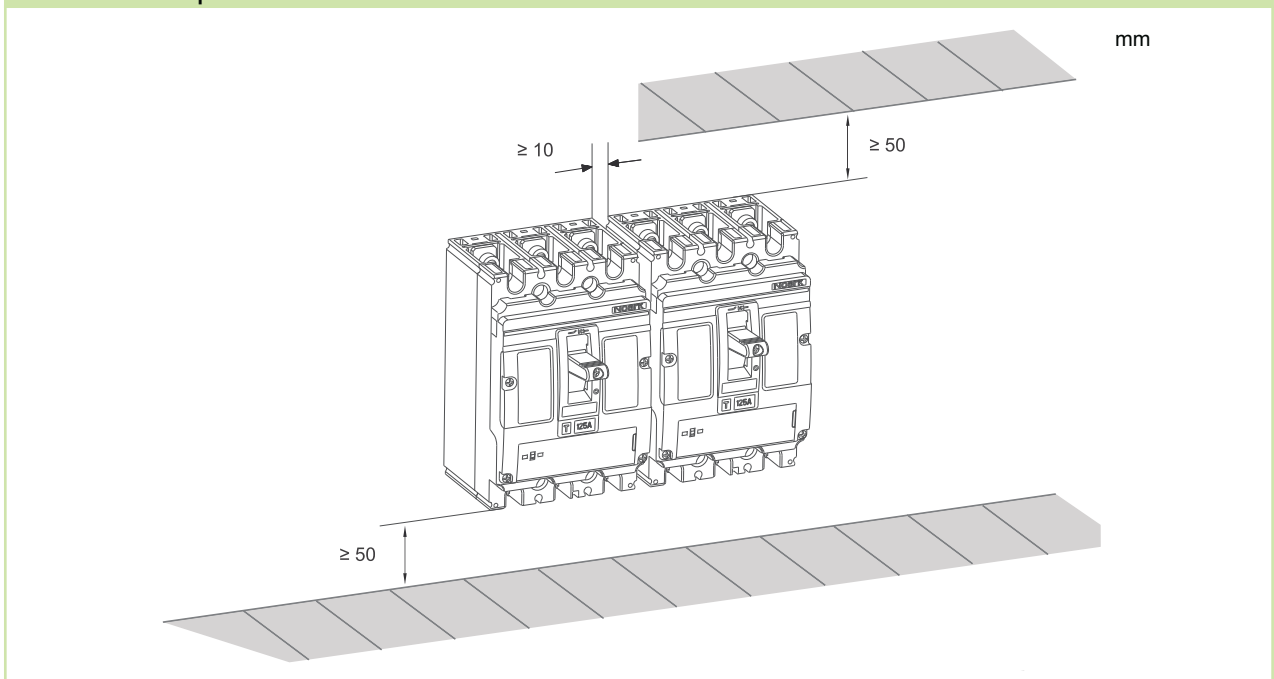
Dimensions



Wiring diagram



Installation space



Technical Data Ex9M3SD DC

DC Moulded Case Switch Disconnectors up to 400 A

Electrical parameters

Tested according to	IEC/EN 60947-3
Rated op. voltage U_e	750 / 1 000 V DC
Rated insulation voltage U_i	1 000 V
Rated impulse withstand voltage U_{imp}	12 kV
Rated frequency	DC
Rated short-time making capacity I_{cm}	5 kA
Rated short-time withstand current I_{cw}	5 kA / 1 s 5 kA / 3 s
Rated current	400 A
Utilization category	DC-22A, DC-23A, DC-PV2
Mechanical service life	15 000 operation cycles
Electrical service life	1 500 operation cycles / 1 000 V DC
Total disconnection time at short circuit	< 2 ms
Line voltage connection	arbitrary above or below

Power dissipation characteristics

I_n	400 A
Pole resistance (m Ω)	0.15
Pole power dissipation (W)	24

Mechanical parameters

Device width 3P / 4P	140 mm / 185 mm
Device height	255 mm
Device depth	118.5 mm
Mounting	onto panel
Degree of protection	IP40, IP20 terminals
Terminals	M10 screws
Busbar thickness	≤ 8 mm
Busbar width	≤ 30 mm
Cable lug width	≤ 30 mm
Fastening torque of terminals	25 Nm
Ambient temperature	-40 — +70 °C
Relative humidity	≤ 50 % at 40 °C, ≤ 90 % monthly average
Pollution degree	3
Weight 3P / 4P	5 kg / 6.5 kg
Mounting position	vertical, can be rotated by 90° in each axis

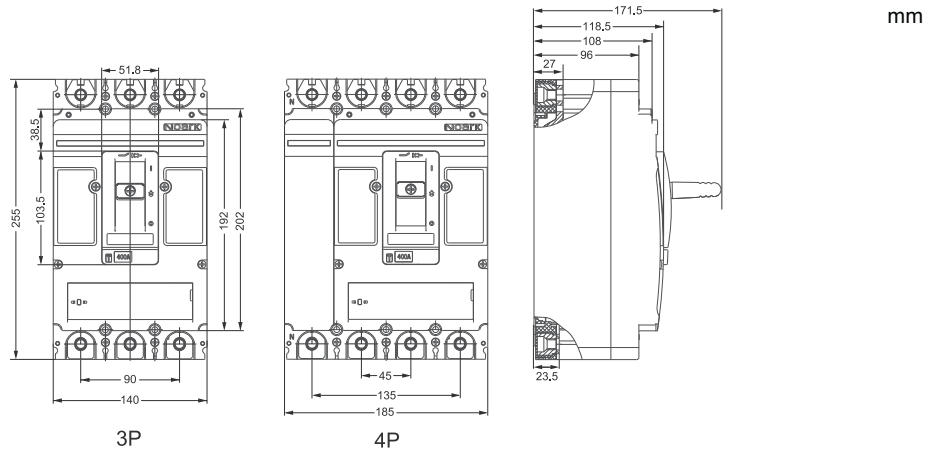
Derating coefficient of technical parameters based on altitude

Altitude	$\leq 2\ 000$ m	3 000 m	4 000 m	5 000 m
Derating op. current I_n coefficient	1	0.96	0.93	0.9
Maximum rated op. voltage U_e	1 000 V DC	900 V DC	850 V DC	800 V DC
Rated insulation voltage U_i	1 000 V DC	930 V DC	870 V DC	800 V DC
Rated impulse withstand voltage U_{imp}	12 kV	10 kV	8 kV	8 kV
Dielectric properties ($U_{imp}=12$ kV)	3 600 V DC	3 350 V DC	3 110 V DC	2 985 V DC

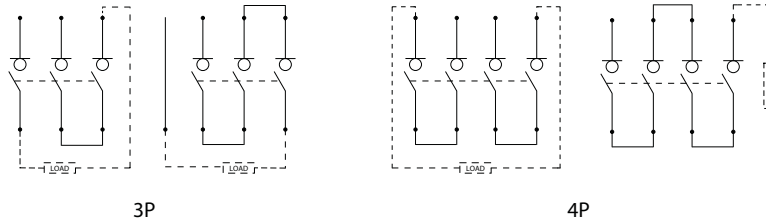
Technical Data Ex9M3SD DC

DC Moulded Case Switch Disconnectors up to 400 A

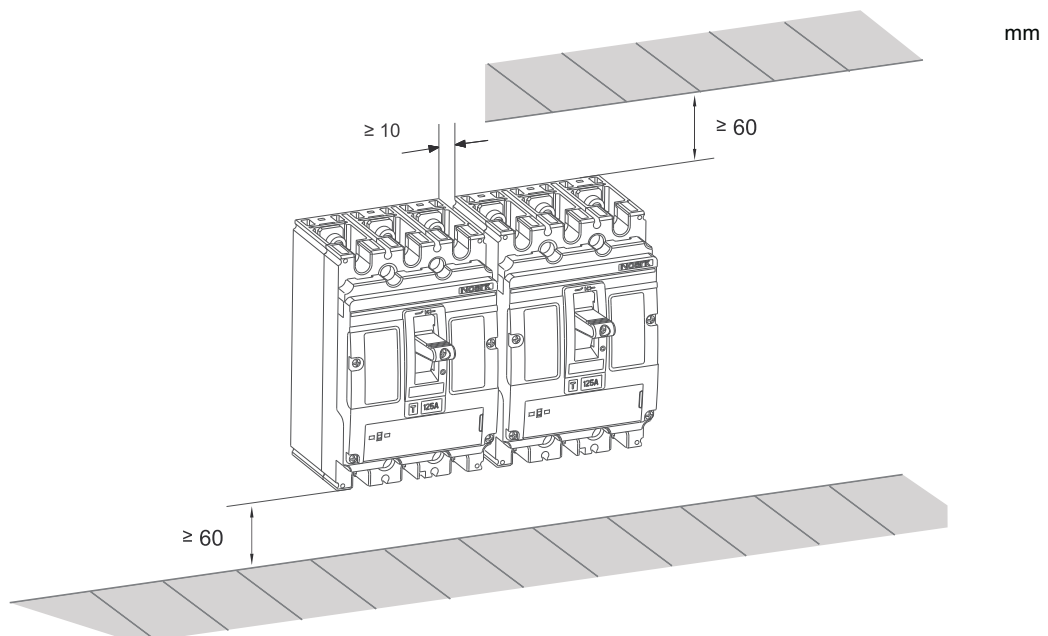
Dimensions



Wiring diagram



Installation space



Technical Data Ex9M4SD DC

DC Moulded Case Switch Disconnectors up to 630 A

Electrical parameters

Tested according to	IEC/EN 60947-3
Rated op. voltage U_e	750 / 1 000 V DC
Rated insulation voltage U_i	1 000 V
Rated impulse withstand voltage U_{imp}	12 kV
Rated frequency	DC
Rated short-time making capacity I_{cm}	14 kA
Rated short-time withstand current I_{cw}	8 kA / 1 s 8 kA / 3 s
Rated current	630 A
Utilization category	DC-22A, DC-23A, DC-PV2
Mechanical service life	10 000 operation cycles
Electrical service life	1 000 operation cycles / 1 000 V DC
Total disconnection time at short circuit	< 2 ms
Line voltage connection	arbitrary above or below

Power dissipation characteristics

I_n	630 A
Pole resistance (mΩ)	0.08
Pole power dissipation (W)	31.8

Mechanical parameters

Device width 3P / 4P	195 mm / 260 mm
Device height	300 mm
Device depth	142 mm
Mounting	onto panel
Degree of protection	IP40, IP20 terminals
Terminals	M12 screws
Busbar thickness	≤ 10 mm
Busbar width	≤ 50 mm
Cable lug width	≤ 50 mm
Fastening torque of terminals	30 Nm
Ambient temperature	-40 — +70 °C
Relative humidity	≤ 50 % at 40 °C, ≤ 90 % monthly average
Pollution degree	3
Weight 3P / 4P	9.5 kg / 12.5 kg
Mounting position	vertical, can be rotated by 90° in each axis

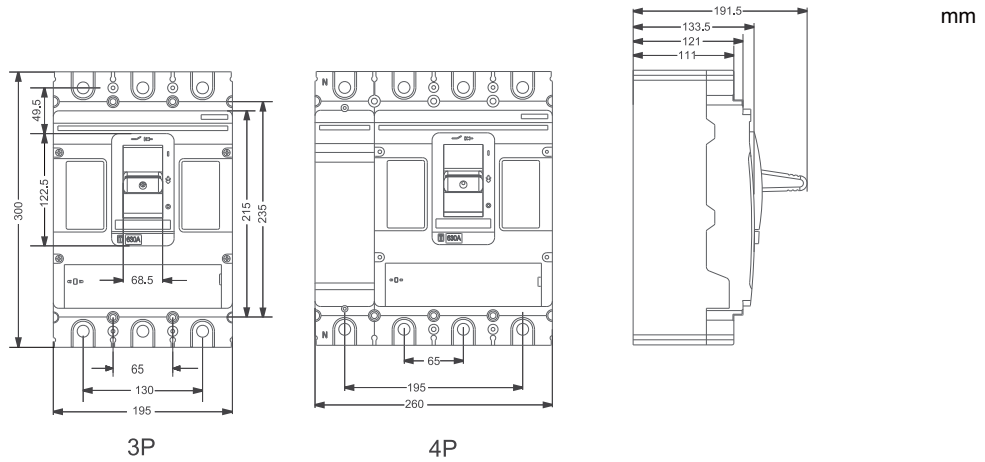
Derating coefficient of technical parameters based on altitude

Altitude	≤ 2 000 m	3 000 m	4 000 m	5 000 m
Derating op. current I_n coefficient	1	0.96	0.93	0.9
Maximum rated op. voltage U_e	1 000 V DC	900 V DC	850 V DC	800 V DC
Rated insulation voltage U_i	1 000 V DC	930 V DC	870 V DC	800 V DC
Rated impulse withstand voltage U_{imp}	12 kV	10 kV	8 kV	8 kV
Dielectric properties ($U_{imp}=12$ kV)	3 600 V DC	3 350 V DC	3 110 V DC	2 985 V DC

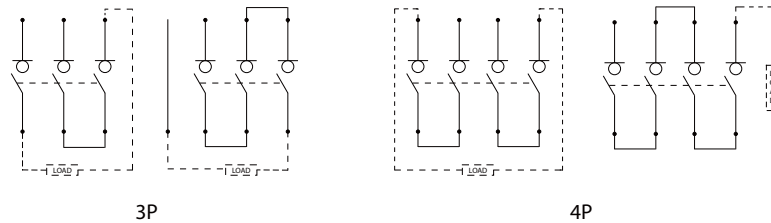
Technical Data Ex9M4SD DC

DC Moulded Case Switch Disconnectors up to 630 A

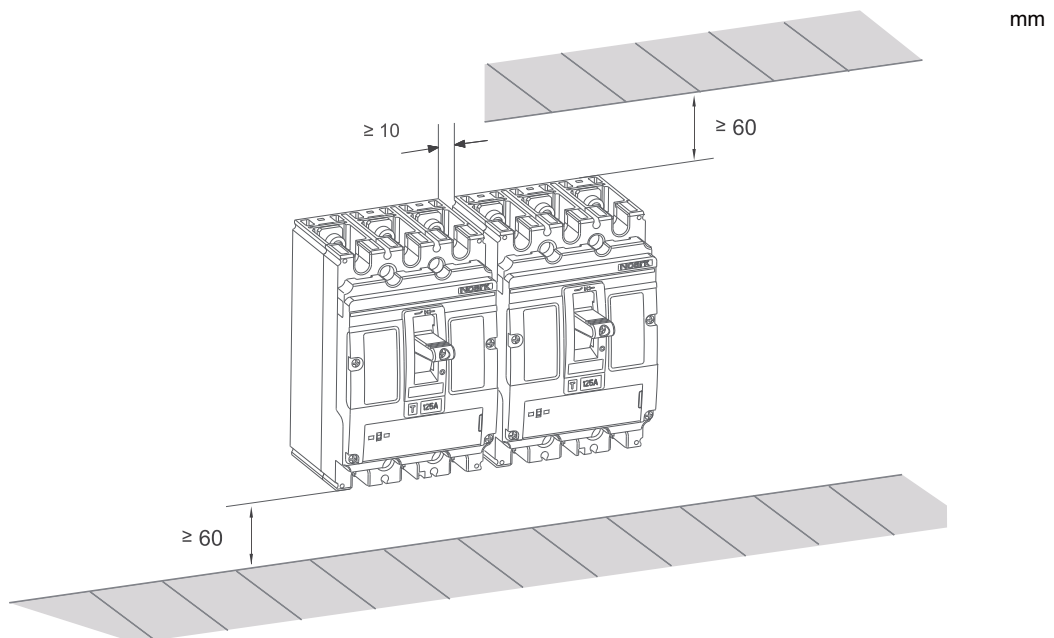
Dimensions



Wiring diagram



Installation space



Technical Data Ex9M5SD DC

DC Moulded Case Switch Disconnectors up to 800 A

Electrical parameters

Tested according to	IEC/EN 60947-3
Rated op. voltage U_e	1 000 V DC
Rated insulation voltage U_i	1 250 V
Rated impulse withstand voltage U_{imp}	12 kV
Rated frequency	DC
Rated short-time making capacity I_{cm}	17 kA
Rated short-time withstand current I_{cw}	10 kA / 1 s 10 kA / 3 s
Rated current	800 A
Utilization category	DC-22A, DC-23A, DC-PV2
Mechanical service life	10 000 operation cycles
Electrical service life	1 000 operation cycles / 1 000 V DC
Total disconnection time at short circuit	< 2 ms
Line voltage connection	arbitrary above or below

Power dissipation characteristics

I_n	800 A
Pole resistance (m Ω)	0.08
Pole power dissipation (W)	51.2

Mechanical parameters

Device width 3P / 4P	195 mm / 260 mm
Device height	300 mm
Device depth	142 mm
Mounting	onto panel
Degree of protection	IP40, IP20 terminals
Terminals	M12 screws
Busbar thickness	≤ 10 mm
Busbar width	≤ 50 mm
Cable lug width	≤ 50 mm
Fastening torque of terminals	30 Nm
Ambient temperature	-40 — +70 °C
Relative humidity	≤ 50 % at 40 °C, ≤ 90 % monthly average
Pollution degree	3
Weight 3P / 4P	9.5 kg / 12.5 kg
Mounting position	vertical, can be rotated by 90° in each axis

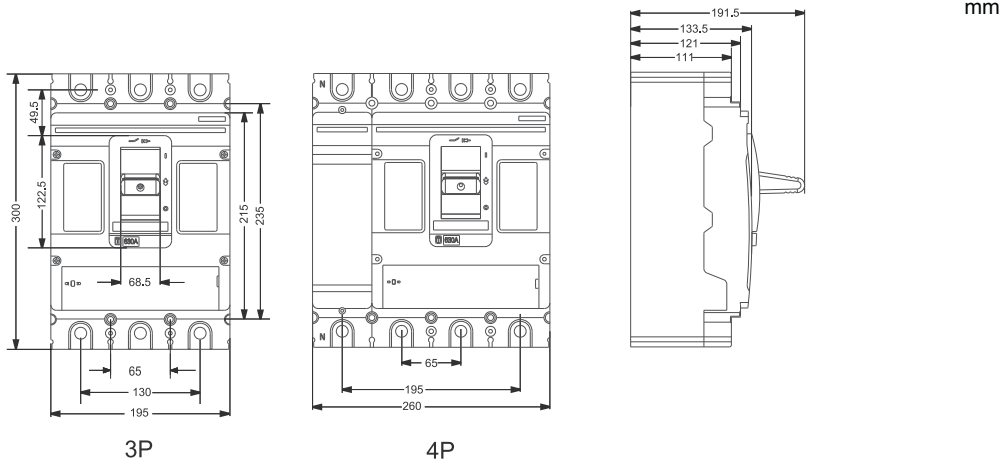
Derating coefficient of technical parameters based on altitude

Altitude	$\leq 2\ 000$ m	3 000 m	4 000 m	5 000 m
Derating op. current I_n coefficient	1	0.96	0.93	0.9
Maximum rated op. voltage U_e	1 000 V DC	900 V DC	850 V DC	800 V DC
Rated insulation voltage U_i	1 000 V DC	930 V DC	870 V DC	800 V DC
Rated impulse withstand voltage U_{imp}	12 kV	10 kV	8 kV	8 kV
Dielectric properties ($U_{imp}=12$ kV)	3 600 V DC	3 350 V DC	3 110 V DC	2 985 V DC

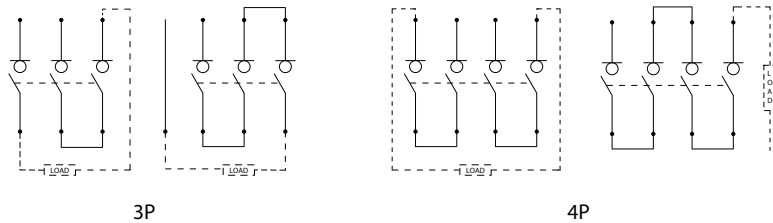
Technical Data Ex9M5SD DC

DC Moulded Case Switch Disconnectors up to 800 A

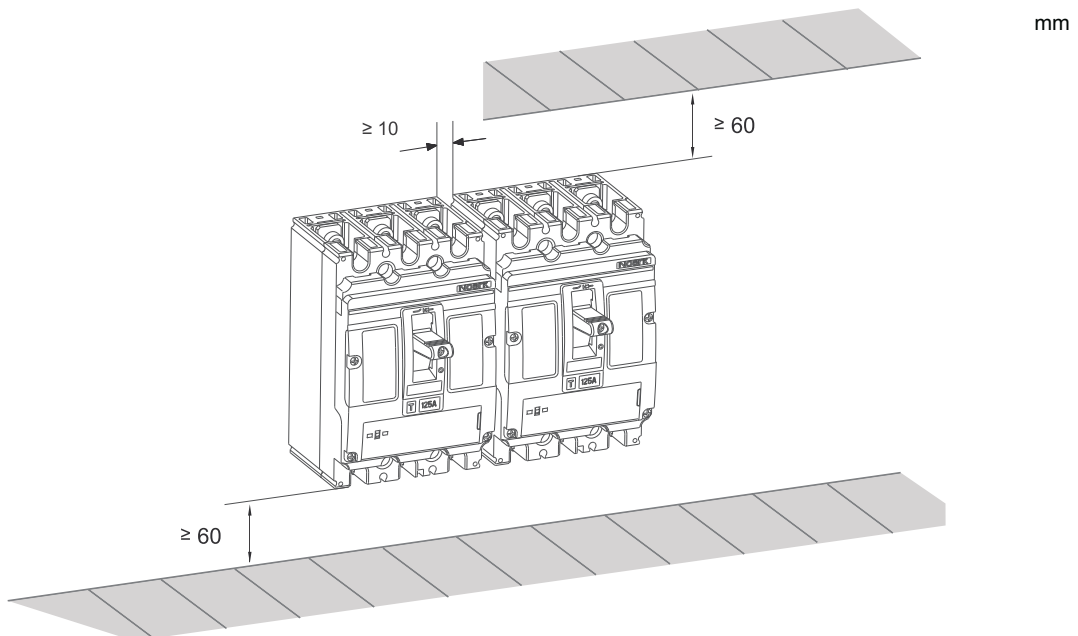
Dimensions



Wiring diagram



Installation space



Technical Data Ex9M6SD DC

DC Moulded Case Switch Disconnectors up to 1 600 A

Electrical parameters

Tested according to	IEC/EN 60947-3
Rated op. voltage U_e	750 / 1 500 V DC
Rated insulation voltage U_i	1 500 V
Rated impulse withstand voltage U_{imp}	12 kV
Rated frequency	DC
Rated short-time making capacity I_{cm}	19.2 kA
Rated short-time withstand current I_{cw}	19.2 kA / 1 s
Rated current	800 / 1 000 / 1 250 / 1 600 A
Utilization category	DC-22A, DC-22B
Mechanical service life	6 000 operation cycles
Electrical service life	1 000 operation cycles / 1 000 V DC
Total disconnection time at short circuit	< 2 ms
Line voltage connection	arbitrary above or below

Power dissipation characteristics

I_n	800 A	1 000 A	1 250 A	1 600 A
Pole resistance (m Ω)	0.08	0.08	0.04	0.04
Pole power dissipation (W)	51.2	80.0	62.5	102.4

Mechanical parameters

Device width 3P / 4P	210 mm / 280 mm
Device height	286 mm
Device depth	191 mm
Mounting	onto panel
Degree of protection	IP40, IP20 terminals
Terminals	M10 screws
Busbar thickness	\leq 10 mm
Busbar width	\leq 50 mm
Cable lug width	\leq 50 mm
Fastening torque of terminals	25 — 30 Nm
Ambient temperature	-40 — +70 °C
Relative humidity	\leq 50 % at 40 °C, \leq 90 % monthly average
Pollution degree	3
Weight 3P / 4P	13 / 17 kg
Mounting position	vertical, can be rotated by 90° in each axis

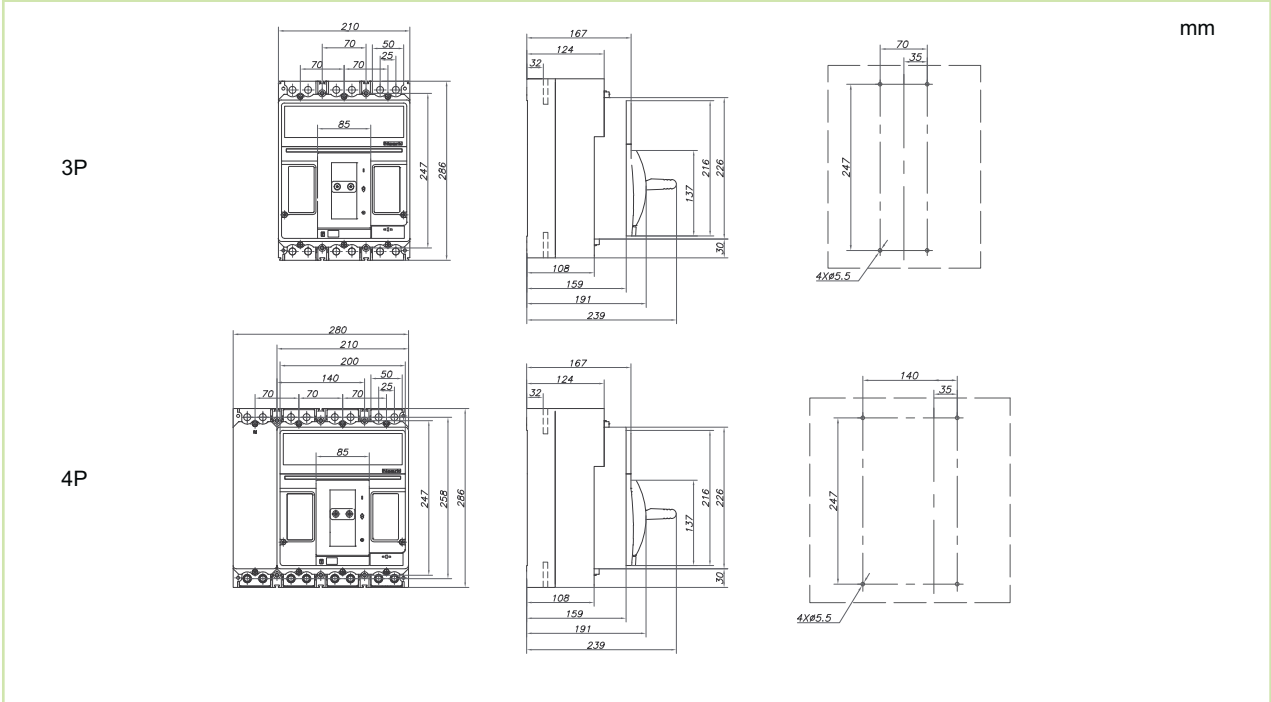
Derating coefficient of technical parameters based on altitude

Altitude	\leq 2 000 m	3 000 m	4 000 m	5 000 m
Derating op. current I_n coefficient	1	0.96	0.93	0.9
Maximum rated op. voltage U_e	1 000 V DC	900 V DC	850 V DC	800 V DC
Rated insulation voltage U_i	1 000 V DC	930 V DC	870 V DC	800 V DC
Rated impulse withstand voltage U_{imp}	12 kV	10 kV	8 kV	8 kV
Dielectric properties ($U_{imp}=12$ kV)	3 600 V DC	3 350 V DC	3 110 V DC	2 985 V DC

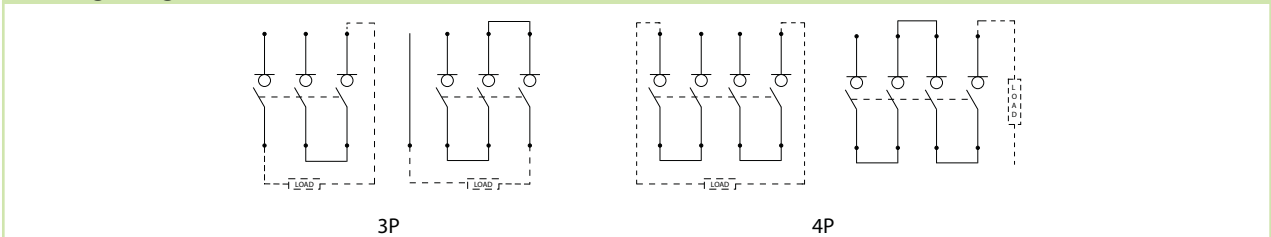
Technical Data Ex9M6SD DC

DC Moulded Case Switch Disconnectors up to 1 600 A

Dimensions



Wiring diagram



Installation space

