

# DC MCCBs Ex9MD



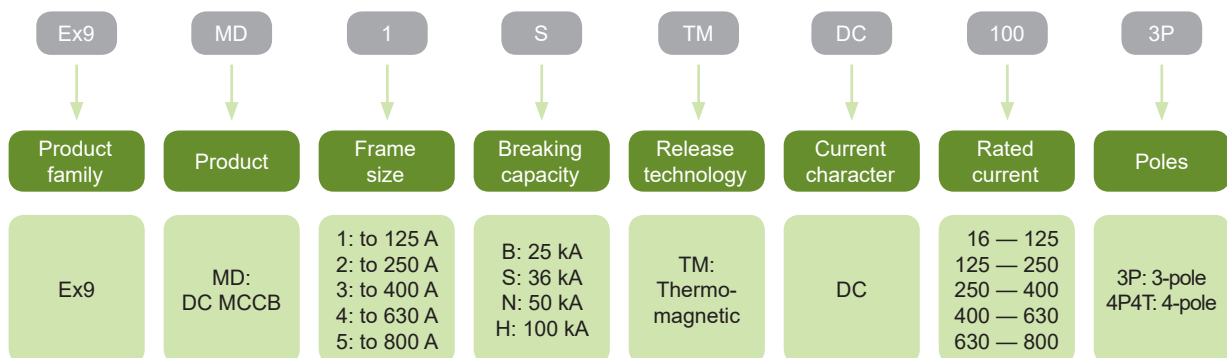
- DC Moulded Case Circuit Breakers
- Frame sizes M1 - M5
- Rated current up to 800 A
- 3 and 4-pole versions
- Rated ultimate short circuit breaking capacity  $I_{cu}$  up to 100 kA,  $I_{cs} = 100 \% I_{cu}$
- Rated voltage 750 V DC (3-pole) and 1000 V DC (4-pole)
- Thermomagnetic releases
- Fixed version

DC Moulded Case Circuit Breakers Ex9MD TM are intended mainly for photovoltaic applications. Testing according to IEC / EN 60947-2 standards ensures functions and reliability for wide variety of applications including isolation.

These breakers are offered with breaking capacities from 25 kA up to 100 kA. Rated impulse withstand voltage  $U_{imp}$  8 kV makes it possible to use them even in systems with occurrences of transient overvoltage waves of high intensity.

Utilization category A.

## Type Key

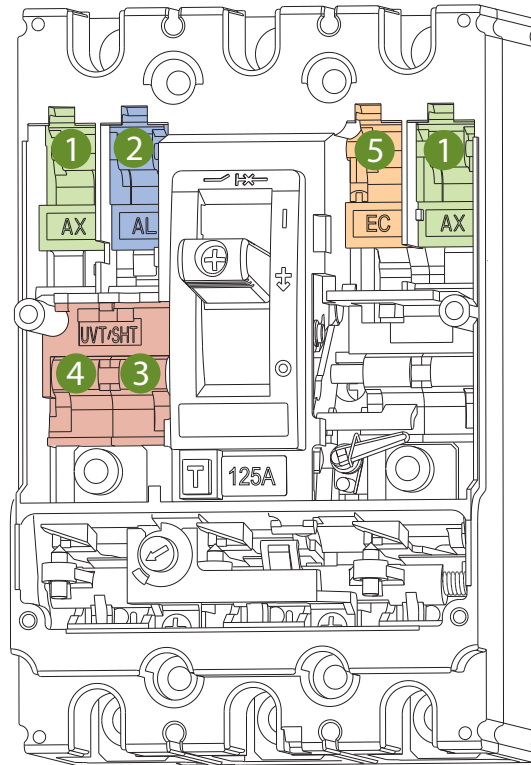


## Certification marks



# DC MCCBs Ex9MD

## Internal accessories



1

Auxiliary contact  
**AX21**

2

Signal contact  
**AL21**

3

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

4

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

5

Early-make  
auxiliary contact  
**EC 2*i***

Auxiliary contact AX21

Signal contact AL21

Shunt trip releases SHT2*i*

Undervoltage releases UVT2*i*

Early-make auxiliary contact EC 2*i*

All internal accessories for the frame sizes M2+M3 and M4+M5 are identical.

The undervoltage release UVT in PV system is intended e.g. for safe remote disconnection of DC part from installation.

# DC MCCBs Ex9MD

## External accessories



Phase barriers  
**PB2i**



Terminal cover, short  
**TCV2i**



Terminal cover, long  
**TCE2i**



Box terminals  
**MC2i**



Tunnel terminals  
**MC2i W**



Mounting depth spacers  
**WG i**



Remote operator  
**MOD2i**



Direct rotary handle  
**RHD2i**



Extended rotary handle  
**ERH2i**

Phase barriers PB2i

Terminal cover, short TCV2i

Terminal cover, long TCE2i

Remote operators MOD2i

Direct rotary handles RHD2i

Extended rotary handles ERH2i

Connection terminals MC2i

Mounting depth spacers WG i

# DC MCCBs Ex9MD1 up to 125 A

## Version Ex9MD1B, $I_{cu} = 25 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 25 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_i$  fixed as  $10 \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_i$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 16 A                | 12.8—16 A                 | 160 A                  | 101768      | Ex9MD1B TM DC16 3P    | 1/8     |
| 20 A                | 16—20 A                   | 200 A                  | 101769      | Ex9MD1B TM DC20 3P    | 1/8     |
| 25 A                | 20—25 A                   | 250 A                  | 101770      | Ex9MD1B TM DC25 3P    | 1/8     |
| 32 A                | 25.6—32 A                 | 320 A                  | 101771      | Ex9MD1B TM DC32 3P    | 1/8     |
| 40 A                | 32—40 A                   | 400 A                  | 101772      | Ex9MD1B TM DC40 3P    | 1/8     |
| 50 A                | 40—50 A                   | 500 A                  | 101773      | Ex9MD1B TM DC50 3P    | 1/8     |
| 63 A                | 50.4—63 A                 | 630 A                  | 101774      | Ex9MD1B TM DC63 3P    | 1/8     |
| 80 A                | 64—80 A                   | 800 A                  | 101775      | Ex9MD1B TM DC80 3P    | 1/8     |
| 100 A               | 80—100 A                  | 1000 A                 | 101776      | Ex9MD1B TM DC100 3P   | 1/8     |
| 125 A               | 100—125 A                 | 1250 A                 | 101777      | Ex9MD1B TM DC125 3P   | 1/8     |
| 16 A                | 12.8—16 A                 | 160 A                  | 101828      | Ex9MD1B TM DC16 4P4T  | 1/8     |
| 20 A                | 16—20 A                   | 200 A                  | 101829      | Ex9MD1B TM DC20 4P4T  | 1/8     |
| 25 A                | 20—25 A                   | 250 A                  | 101830      | Ex9MD1B TM DC25 4P4T  | 1/8     |
| 32 A                | 25.6—32 A                 | 320 A                  | 101831      | Ex9MD1B TM DC32 4P4T  | 1/8     |
| 40 A                | 32—40 A                   | 400 A                  | 101832      | Ex9MD1B TM DC40 4P4T  | 1/8     |
| 50 A                | 40—50 A                   | 500 A                  | 101833      | Ex9MD1B TM DC50 4P4T  | 1/8     |
| 63 A                | 50.4—63 A                 | 630 A                  | 101834      | Ex9MD1B TM DC63 4P4T  | 1/8     |
| 80 A                | 64—80 A                   | 800 A                  | 101835      | Ex9MD1B TM DC80 4P4T  | 1/8     |
| 100 A               | 80—100 A                  | 1000 A                 | 101836      | Ex9MD1B TM DC100 4P4T | 1/8     |
| 125 A               | 100—125 A                 | 1250 A                 | 101837      | Ex9MD1B TM DC125 4P4T | 1/8     |

## Version Ex9MD1S, $I_{cu} = 36 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 36 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_i$  fixed as  $10 \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_i$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 16 A                | 12.8—16 A                 | 160 A                  | 101778      | Ex9MD1S TM DC16 3P    | 1/8     |
| 20 A                | 16—20 A                   | 200 A                  | 101779      | Ex9MD1S TM DC20 3P    | 1/8     |
| 25 A                | 20—25 A                   | 250 A                  | 101780      | Ex9MD1S TM DC25 3P    | 1/8     |
| 32 A                | 25.6—32 A                 | 320 A                  | 101781      | Ex9MD1S TM DC32 3P    | 1/8     |
| 40 A                | 32—40 A                   | 400 A                  | 101782      | Ex9MD1S TM DC40 3P    | 1/8     |
| 50 A                | 40—50 A                   | 500 A                  | 101783      | Ex9MD1S TM DC50 3P    | 1/8     |
| 63 A                | 50.4—63 A                 | 630 A                  | 101784      | Ex9MD1S TM DC63 3P    | 1/8     |
| 80 A                | 64—80 A                   | 800 A                  | 101785      | Ex9MD1S TM DC80 3P    | 1/8     |
| 100 A               | 80—100 A                  | 1000 A                 | 101786      | Ex9MD1S TM DC100 3P   | 1/8     |
| 125 A               | 100—125 A                 | 1250 A                 | 101787      | Ex9MD1S TM DC125 3P   | 1/8     |
| 16 A                | 12.8—16 A                 | 160 A                  | 101838      | Ex9MD1S TM DC16 4P4T  | 1/8     |
| 20 A                | 16—20 A                   | 200 A                  | 101839      | Ex9MD1S TM DC20 4P4T  | 1/8     |
| 25 A                | 20—25 A                   | 250 A                  | 101840      | Ex9MD1S TM DC25 4P4T  | 1/8     |
| 32 A                | 25.6—32 A                 | 320 A                  | 101841      | Ex9MD1S TM DC32 4P4T  | 1/8     |
| 40 A                | 32—40 A                   | 400 A                  | 101842      | Ex9MD1S TM DC40 4P4T  | 1/8     |
| 50 A                | 40—50 A                   | 500 A                  | 101843      | Ex9MD1S TM DC50 4P4T  | 1/8     |
| 63 A                | 50.4—63 A                 | 630 A                  | 101844      | Ex9MD1S TM DC63 4P4T  | 1/8     |
| 80 A                | 64—80 A                   | 800 A                  | 101845      | Ex9MD1S TM DC80 4P4T  | 1/8     |
| 100 A               | 80—100 A                  | 1000 A                 | 101846      | Ex9MD1S TM DC100 4P4T | 1/8     |
| 125 A               | 100—125 A                 | 1250 A                 | 101847      | Ex9MD1S TM DC125 4P4T | 1/8     |

# DC MCCBs Ex9MD1 up to 125 A

## Version Ex9MD1N, $I_{cu} = 50 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 50 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_i$  fixed as  $10 \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_i$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 16 A                | 12.8—16 A                 | 160 A                  | 101788      | Ex9MD1N TM DC16 3P    | 1/8     |
| 20 A                | 16—20 A                   | 200 A                  | 101789      | Ex9MD1N TM DC20 3P    | 1/8     |
| 25 A                | 20—25 A                   | 250 A                  | 101790      | Ex9MD1N TM DC25 3P    | 1/8     |
| 32 A                | 25.6—32 A                 | 320 A                  | 101791      | Ex9MD1N TM DC32 3P    | 1/8     |
| 40 A                | 32—40 A                   | 400 A                  | 101792      | Ex9MD1N TM DC40 3P    | 1/8     |
| 50 A                | 40—50 A                   | 500 A                  | 101793      | Ex9MD1N TM DC50 3P    | 1/8     |
| 63 A                | 50.4—63 A                 | 630 A                  | 101794      | Ex9MD1N TM DC63 3P    | 1/8     |
| 80 A                | 64—80 A                   | 800 A                  | 101795      | Ex9MD1N TM DC80 3P    | 1/8     |
| 100 A               | 80—100 A                  | 1000 A                 | 101796      | Ex9MD1N TM DC100 3P   | 1/8     |
| 125 A               | 100—125 A                 | 1250 A                 | 101797      | Ex9MD1N TM DC125 3P   | 1/8     |
| 16 A                | 12.8—16 A                 | 160 A                  | 101848      | Ex9MD1N TM DC16 4P4T  | 1/8     |
| 20 A                | 16—20 A                   | 200 A                  | 101849      | Ex9MD1N TM DC20 4P4T  | 1/8     |
| 25 A                | 20—25 A                   | 250 A                  | 101850      | Ex9MD1N TM DC25 4P4T  | 1/8     |
| 32 A                | 25.6—32 A                 | 320 A                  | 101851      | Ex9MD1N TM DC32 4P4T  | 1/8     |
| 40 A                | 32—40 A                   | 400 A                  | 101852      | Ex9MD1N TM DC40 4P4T  | 1/8     |
| 50 A                | 40—50 A                   | 500 A                  | 101853      | Ex9MD1N TM DC50 4P4T  | 1/8     |
| 63 A                | 50.4—63 A                 | 630 A                  | 101854      | Ex9MD1N TM DC63 4P4T  | 1/8     |
| 80 A                | 64—80 A                   | 800 A                  | 101855      | Ex9MD1N TM DC80 4P4T  | 1/8     |
| 100 A               | 80—100 A                  | 1000 A                 | 101856      | Ex9MD1N TM DC100 4P4T | 1/8     |
| 125 A               | 100—125 A                 | 1250 A                 | 101857      | Ex9MD1N TM DC125 4P4T | 1/8     |

## Version Ex9MD1H, $I_{cu} = 100 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 100 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_i$  fixed as  $10 \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_i$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 16 A                | 12.8—16 A                 | 160 A                  | 101818      | Ex9MD1H TM DC16 3P    | 1/8     |
| 20 A                | 16—20 A                   | 200 A                  | 101819      | Ex9MD1H TM DC20 3P    | 1/8     |
| 25 A                | 20—25 A                   | 250 A                  | 101820      | Ex9MD1H TM DC25 3P    | 1/8     |
| 32 A                | 25.6—32 A                 | 320 A                  | 101821      | Ex9MD1H TM DC32 3P    | 1/8     |
| 40 A                | 32—40 A                   | 400 A                  | 101822      | Ex9MD1H TM DC40 3P    | 1/8     |
| 50 A                | 40—50 A                   | 500 A                  | 101823      | Ex9MD1H TM DC50 3P    | 1/8     |
| 63 A                | 50.4—63 A                 | 630 A                  | 101824      | Ex9MD1H TM DC63 3P    | 1/8     |
| 80 A                | 64—80 A                   | 800 A                  | 101825      | Ex9MD1H TM DC80 3P    | 1/8     |
| 100 A               | 80—100 A                  | 1000 A                 | 101826      | Ex9MD1H TM DC100 3P   | 1/8     |
| 125 A               | 100—125 A                 | 1250 A                 | 101827      | Ex9MD1H TM DC125 3P   | 1/8     |
| 16 A                | 12.8—16 A                 | 160 A                  | 101878      | Ex9MD1H TM DC16 4P4T  | 1/8     |
| 20 A                | 16—20 A                   | 200 A                  | 101879      | Ex9MD1H TM DC20 4P4T  | 1/8     |
| 25 A                | 20—25 A                   | 250 A                  | 101880      | Ex9MD1H TM DC25 4P4T  | 1/8     |
| 32 A                | 25.6—32 A                 | 320 A                  | 101881      | Ex9MD1H TM DC32 4P4T  | 1/8     |
| 40 A                | 32—40 A                   | 400 A                  | 101882      | Ex9MD1H TM DC40 4P4T  | 1/8     |
| 50 A                | 40—50 A                   | 500 A                  | 101883      | Ex9MD1H TM DC50 4P4T  | 1/8     |
| 63 A                | 50.4—63 A                 | 630 A                  | 101884      | Ex9MD1H TM DC63 4P4T  | 1/8     |
| 80 A                | 64—80 A                   | 800 A                  | 101885      | Ex9MD1H TM DC80 4P4T  | 1/8     |
| 100 A               | 80—100 A                  | 1000 A                 | 101886      | Ex9MD1H TM DC100 4P4T | 1/8     |
| 125 A               | 100—125 A                 | 1250 A                 | 101887      | Ex9MD1H TM DC125 4P4T | 1/8     |

# DC MCCBs Ex9MD2 up to 250 A

## Version Ex9MD2B, $I_{cu} = 25$ kA

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 25$  kA at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_r$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_i$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 125 A               | 100-125 A                 | 625-1250               | 101888      | Ex9MD2B TM DC125 3P   | 1/4     |
| 160 A               | 128-160 A                 | 800-1600               | 101889      | Ex9MD2B TM DC160 3P   | 1/4     |
| 180 A               | 144-180 A                 | 900-1800               | 101890      | Ex9MD2B TM DC180 3P   | 1/4     |
| 200 A               | 160-200 A                 | 1000-2000              | 101891      | Ex9MD2B TM DC200 3P   | 1/4     |
| 225 A               | 180-225 A                 | 1125-2250              | 101892      | Ex9MD2B TM DC225 3P   | 1/4     |
| 250 A               | 200-250 A                 | 1250-2500              | 101893      | Ex9MD2B TM DC250 3P   | 1/4     |
| 125 A               | 100-125 A                 | 625-1250               | 101924      | Ex9MD2B TM DC125 4P4T | 1/4     |
| 160 A               | 128-160 A                 | 800-1600               | 101925      | Ex9MD2B TM DC160 4P4T | 1/4     |
| 180 A               | 144-180 A                 | 900-1800               | 101926      | Ex9MD2B TM DC180 4P4T | 1/4     |
| 200 A               | 160-200 A                 | 1000-2000              | 101927      | Ex9MD2B TM DC200 4P4T | 1/4     |
| 225 A               | 180-225 A                 | 1125-2250              | 101928      | Ex9MD2B TM DC225 4P4T | 1/4     |
| 250 A               | 200-250 A                 | 1250-2500              | 101929      | Ex9MD2B TM DC250 4P4T | 1/4     |

## Version Ex9MD2S, $I_{cu} = 36$ kA

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 36$  kA at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_r$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_i$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 125 A               | 100-125 A                 | 625-1250               | 101894      | Ex9MD2S TM DC125 3P   | 1/4     |
| 160 A               | 128-160 A                 | 800-1600               | 101895      | Ex9MD2S TM DC160 3P   | 1/4     |
| 180 A               | 144-180 A                 | 900-1800               | 101896      | Ex9MD2S TM DC180 3P   | 1/4     |
| 200 A               | 160-200 A                 | 1000-2000              | 101897      | Ex9MD2S TM DC200 3P   | 1/4     |
| 225 A               | 180-225 A                 | 1125-2250              | 101898      | Ex9MD2S TM DC225 3P   | 1/4     |
| 250 A               | 200-250 A                 | 1250-2500              | 101899      | Ex9MD2S TM DC250 3P   | 1/4     |
| 125 A               | 100-125 A                 | 625-1250               | 101930      | Ex9MD2S TM DC125 4P4T | 1/4     |
| 160 A               | 128-160 A                 | 800-1600               | 101931      | Ex9MD2S TM DC160 4P4T | 1/4     |
| 180 A               | 144-180 A                 | 900-1800               | 101932      | Ex9MD2S TM DC180 4P4T | 1/4     |
| 200 A               | 160-200 A                 | 1000-2000              | 101933      | Ex9MD2S TM DC200 4P4T | 1/4     |
| 225 A               | 180-225 A                 | 1125-2250              | 101934      | Ex9MD2S TM DC225 4P4T | 1/4     |
| 250 A               | 200-250 A                 | 1250-2500              | 101935      | Ex9MD2S TM DC250 4P4T | 1/4     |

# DC MCCBs Ex9MD2 up to 250 A

## Version Ex9MD2N, $I_{cu} = 50 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 50 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_i$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_i$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 125 A               | 100-125 A                 | 625-1250               | 101900      | Ex9MD2N TM DC125 3P   | 1/4     |
| 160 A               | 128-160 A                 | 800-1600               | 101901      | Ex9MD2N TM DC160 3P   | 1/4     |
| 180 A               | 144-180 A                 | 900-1800               | 101902      | Ex9MD2N TM DC180 3P   | 1/4     |
| 200 A               | 160-200 A                 | 1000-2000              | 101903      | Ex9MD2N TM DC200 3P   | 1/4     |
| 225 A               | 180-225 A                 | 1125-2250              | 101904      | Ex9MD2N TM DC225 3P   | 1/4     |
| 250 A               | 200-250 A                 | 1250-2500              | 101905      | Ex9MD2N TM DC250 3P   | 1/4     |
| 125 A               | 100-125 A                 | 625-1250               | 101936      | Ex9MD2N TM DC125 4P4T | 1/4     |
| 160 A               | 128-160 A                 | 800-1600               | 101937      | Ex9MD2N TM DC160 4P4T | 1/4     |
| 180 A               | 144-180 A                 | 900-1800               | 101938      | Ex9MD2N TM DC180 4P4T | 1/4     |
| 200 A               | 160-200 A                 | 1000-2000              | 101939      | Ex9MD2N TM DC200 4P4T | 1/4     |
| 225 A               | 180-225 A                 | 1125-2250              | 101940      | Ex9MD2N TM DC225 4P4T | 1/4     |
| 250 A               | 200-250 A                 | 1250-2500              | 101941      | Ex9MD2N TM DC250 4P4T | 1/4     |

## Version Ex9MD2H, $I_{cu} = 100 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 100 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_i$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_i$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 125 A               | 100-125 A                 | 625-1250               | 101918      | Ex9MD2H TM DC125 3P   | 1/4     |
| 160 A               | 128-160 A                 | 800-1600               | 101919      | Ex9MD2H TM DC160 3P   | 1/4     |
| 180 A               | 144-180 A                 | 900-1800               | 101920      | Ex9MD2H TM DC180 3P   | 1/4     |
| 200 A               | 160-200 A                 | 1000-2000              | 101921      | Ex9MD2H TM DC200 3P   | 1/4     |
| 225 A               | 180-225 A                 | 1125-2250              | 101922      | Ex9MD2H TM DC225 3P   | 1/4     |
| 250 A               | 200-250 A                 | 1250-2500              | 101923      | Ex9MD2H TM DC250 3P   | 1/4     |
| 125 A               | 100-125 A                 | 625-1250               | 101954      | Ex9MD2H TM DC125 4P4T | 1/4     |
| 160 A               | 128-160 A                 | 800-1600               | 101955      | Ex9MD2H TM DC160 4P4T | 1/4     |
| 180 A               | 144-180 A                 | 900-1800               | 101956      | Ex9MD2H TM DC180 4P4T | 1/4     |
| 200 A               | 160-200 A                 | 1000-2000              | 101957      | Ex9MD2H TM DC200 4P4T | 1/4     |
| 225 A               | 180-225 A                 | 1125-2250              | 101958      | Ex9MD2H TM DC225 4P4T | 1/4     |
| 250 A               | 200-250 A                 | 1250-2500              | 101959      | Ex9MD2H TM DC250 4P4T | 1/4     |

# DC MCCBs Ex9MD3 up to 400 A

## Version Ex9MD3B, $I_{cu} = 25$ kA

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 25$  kA at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_i$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_i$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 250 A               | 200-250 A                 | 1250-2500              | 101960      | Ex9MD3B TM DC250 3P   | 1/2     |
| 315 A               | 252-315 A                 | 1575-3150              | 101961      | Ex9MD3B TM DC315 3P   | 1/2     |
| 350 A               | 280-350 A                 | 1750-3500              | 101962      | Ex9MD3B TM DC350 3P   | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 101963      | Ex9MD3B TM DC400 3P   | 1/2     |
| 250 A               | 200-250 A                 | 1250-2500              | 101984      | Ex9MD3B TM DC250 4P4T | 1/2     |
| 315 A               | 252-315 A                 | 1575-3150              | 101985      | Ex9MD3B TM DC315 4P4T | 1/2     |
| 350 A               | 280-350 A                 | 1750-3500              | 101986      | Ex9MD3B TM DC350 4P4T | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 101987      | Ex9MD3B TM DC400 4P4T | 1/2     |

## Version Ex9MD3S, $I_{cu} = 36$ kA

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 36$  kA at 750/1000 V AC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_i$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_i$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 250 A               | 200-250 A                 | 1250-2500              | 101964      | Ex9MD3S TM DC250 3P   | 1/2     |
| 315 A               | 252-315 A                 | 1575-3150              | 101965      | Ex9MD3S TM DC315 3P   | 1/2     |
| 350 A               | 280-350 A                 | 1750-3500              | 101966      | Ex9MD3S TM DC350 3P   | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 101967      | Ex9MD3S TM DC400 3P   | 1/2     |
| 250 A               | 200-250 A                 | 1250-2500              | 101988      | Ex9MD3S TM DC250 4P4T | 1/2     |
| 315 A               | 252-315 A                 | 1575-3150              | 101989      | Ex9MD3S TM DC315 4P4T | 1/2     |
| 350 A               | 280-350 A                 | 1750-3500              | 101990      | Ex9MD3S TM DC350 4P4T | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 101991      | Ex9MD3S TM DC400 4P4T | 1/2     |



# DC MCCBs Ex9MD3 up to 400 A

## Version Ex9MD3N, $I_{cu} = 50 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 50 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_j$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_j$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 250 A               | 200-250 A                 | 1250-2500              | 101968      | Ex9MD3N TM DC250 3P   | 1/2     |
| 315 A               | 252-315 A                 | 1575-3150              | 101969      | Ex9MD3N TM DC315 3P   | 1/2     |
| 350 A               | 280-350 A                 | 1750-3500              | 101970      | Ex9MD3N TM DC350 3P   | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 101971      | Ex9MD3N TM DC400 3P   | 1/2     |
| 250 A               | 200-250 A                 | 1250-2500              | 101992      | Ex9MD3N TM DC250 4P4T | 1/2     |
| 315 A               | 252-315 A                 | 1575-3150              | 101993      | Ex9MD3N TM DC315 4P4T | 1/2     |
| 350 A               | 280-350 A                 | 1750-3500              | 101994      | Ex9MD3N TM DC350 4P4T | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 101995      | Ex9MD3N TM DC400 4P4T | 1/2     |

## Version Ex9MD3H, $I_{cu} = 100 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 100 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_j$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_j$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 250 A               | 200-250 A                 | 1250-2500              | 101980      | Ex9MD3H TM DC250 3P   | 1/2     |
| 315 A               | 252-315 A                 | 1575-3150              | 101981      | Ex9MD3H TM DC315 3P   | 1/2     |
| 350 A               | 280-350 A                 | 1750-3500              | 101982      | Ex9MD3H TM DC350 3P   | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 101983      | Ex9MD3H TM DC400 3P   | 1/2     |
| 250 A               | 200-250 A                 | 1250-2500              | 101204      | Ex9MD3H TM DC250 4P4T | 1/2     |
| 315 A               | 252-315 A                 | 1575-3150              | 101205      | Ex9MD3H TM DC315 4P4T | 1/2     |
| 350 A               | 280-350 A                 | 1750-3500              | 101206      | Ex9MD3H TM DC350 4P4T | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 101207      | Ex9MD3H TM DC400 4P4T | 1/2     |

# DC MCCBs Ex9MD4 up to 630 A

## Version Ex9MD4B, $I_{cu} = 25$ kA

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 25$  kA at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_f$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_f$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 400 A               | 320-400 A                 | 2000-4000              | 103932      | Ex9MD4B TM DC400 3P   | 1/2     |
| 500 A               | 400-500 A                 | 2500-5000              | 103933      | Ex9MD4B TM DC500 3P   | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 103934      | Ex9MD4B TM DC630 3P   | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 103950      | Ex9MD4B TM DC400 4P4T | 1/2     |
| 500 A               | 400-500 A                 | 2500-5000              | 103951      | Ex9MD4B TM DC500 4P4T | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 103952      | Ex9MD4B TM DC630 4P4T | 1/2     |

## Version Ex9MD4S, $I_{cu} = 36$ kA

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 36$  kA at 750/1000 V AC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_f$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_f$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 400 A               | 320-400 A                 | 2000-4000              | 103935      | Ex9MD4S TM DC400 3P   | 1/2     |
| 500 A               | 400-500 A                 | 2500-5000              | 103936      | Ex9MD4S TM DC500 3P   | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 103937      | Ex9MD4S TM DC630 3P   | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 103953      | Ex9MD4S TM DC400 4P4T | 1/2     |
| 500 A               | 400-500 A                 | 2500-5000              | 103954      | Ex9MD4S TM DC500 4P4T | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 103955      | Ex9MD4S TM DC630 4P4T | 1/2     |

# DC MCCBs Ex9MD4 up to 630 A

## Version Ex9MD4N, $I_{cu} = 50 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 50 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_j$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_j$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 400 A               | 320-400 A                 | 2000-4000              | 103938      | Ex9MD4N TM DC400 3P   | 1/2     |
| 500 A               | 400-500 A                 | 2500-5000              | 103939      | Ex9MD4N TM DC500 3P   | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 103940      | Ex9MD4N TM DC630 3P   | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 103956      | Ex9MD4N TM DC400 4P4T | 1/2     |
| 500 A               | 400-500 A                 | 2500-5000              | 103957      | Ex9MD4N TM DC500 4P4T | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 103958      | Ex9MD4N TM DC630 4P4T | 1/2     |

## Version Ex9MD4H, $I_{cu} = 100 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 100 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_j$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_j$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 400 A               | 320-400 A                 | 2000-4000              | 103947      | Ex9MD4H TM DC400 3P   | 1/2     |
| 500 A               | 400-500 A                 | 2500-5000              | 103948      | Ex9MD4H TM DC500 3P   | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 103949      | Ex9MD4H TM DC630 3P   | 1/2     |
| 400 A               | 320-400 A                 | 2000-4000              | 103965      | Ex9MD4H TM DC400 4P4T | 1/2     |
| 500 A               | 400-500 A                 | 2500-5000              | 103966      | Ex9MD4H TM DC500 4P4T | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 103967      | Ex9MD4H TM DC630 4P4T | 1/2     |

# DC MCCBs Ex9MD5 up to 800 A

## Version Ex9MD5B, $I_{cu} = 25$ kA

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 25$  kA at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_f$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_f$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 630 A               | 504-630 A                 | 3150-6300              | 103968      | Ex9MD5B TM DC630 3P   | 1/2     |
| 700 A               | 560-700 A                 | 3500-7000              | 103969      | Ex9MD5B TM DC700 3P   | 1/2     |
| 800 A               | 640-800 A                 | 4000-8000              | 103970      | Ex9MD5B TM DC800 3P   | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 103986      | Ex9MD5B TM DC630 4P4T | 1/2     |
| 700 A               | 560-700 A                 | 3500-7000              | 103987      | Ex9MD5B TM DC700 4P4T | 1/2     |
| 800 A               | 640-800 A                 | 4000-8000              | 103988      | Ex9MD5B TM DC800 4P4T | 1/2     |

## Version Ex9MD5S, $I_{cu} = 36$ kA

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 36$  kA at 750/1000 V AC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_f$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_f$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 630 A               | 504-630 A                 | 3150-6300              | 103971      | Ex9MD5S TM DC630 3P   | 1/2     |
| 700 A               | 560-700 A                 | 3500-7000              | 103972      | Ex9MD5S TM DC700 3P   | 1/2     |
| 800 A               | 640-800 A                 | 4000-8000              | 103973      | Ex9MD5S TM DC800 3P   | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 103989      | Ex9MD5S TM DC630 4P4T | 1/2     |
| 700 A               | 560-700 A                 | 3500-7000              | 103990      | Ex9MD5S TM DC700 4P4T | 1/2     |
| 800 A               | 640-800 A                 | 4000-8000              | 103991      | Ex9MD5S TM DC800 4P4T | 1/2     |

# DC MCCBs Ex9MD5 up to 800 A

## Version Ex9MD5N, $I_{cu} = 50 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 50 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_j$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_j$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 630 A               | 504-630 A                 | 3150-6300              | 103974      | Ex9MD5N TM DC630 3P   | 1/2     |
| 700 A               | 560-700 A                 | 3500-7000              | 103975      | Ex9MD5N TM DC700 3P   | 1/2     |
| 800 A               | 640-800 A                 | 4000-8000              | 103976      | Ex9MD5N TM DC800 3P   | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 103992      | Ex9MD5N TM DC630 4P4T | 1/2     |
| 700 A               | 560-700 A                 | 3500-7000              | 103993      | Ex9MD5N TM DC700 4P4T | 1/2     |
| 800 A               | 640-800 A                 | 4000-8000              | 103994      | Ex9MD5N TM DC800 4P4T | 1/2     |

## Version Ex9MD5H, $I_{cu} = 100 \text{ kA}$

- DC Moulded Case Circuit Breakers
- 3 and 4-pole versions
- $I_{cs} = I_{cu} = 100 \text{ kA}$  at 750/1000 V DC
- $I_r$  can be set in steps  $(0.8-0.9-1.0) \times I_n$
- $I_j$  variable  $(5-6-7-8-9-10) \times I_n$
- Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery



| Rated current $I_n$ | Overcurrent release $I_r$ | Instant. release $I_j$ | Article No. | Type                  | Packing |
|---------------------|---------------------------|------------------------|-------------|-----------------------|---------|
| 630 A               | 504-630 A                 | 3150-6300              | 103983      | Ex9MD5H TM DC630 3P   | 1/2     |
| 700 A               | 560-700 A                 | 3500-7000              | 103984      | Ex9MD5H TM DC700 3P   | 1/2     |
| 800 A               | 640-800 A                 | 4000-8000              | 103985      | Ex9MD5H TM DC800 3P   | 1/2     |
| 630 A               | 504-630 A                 | 3150-6300              | 104001      | Ex9MD5H TM DC630 4P4T | 1/2     |
| 700 A               | 560-700 A                 | 3500-7000              | 104002      | Ex9MD5H TM DC700 4P4T | 1/2     |
| 800 A               | 640-800 A                 | 4000-8000              | 104003      | Ex9MD5H TM DC800 4P4T | 1/2     |

# Technical Data Ex9MD1

## DC Moulded Case Circuit Breakers up to 125 A

### General parameters

Suitable for PV and similar applications

Thermal release adjustable  $(0.8-0.9-1) \times I_n$

Instantaneous short-circuit current release fixed  $10 \times I_n$

Internal accessories

|                              |       |               |
|------------------------------|-------|---------------|
| Auxiliary contact unit       | AX21  | 101395        |
| Alarm contact unit           | AL21  | 101396        |
| Early-make auxiliary contact | EC 21 | 106315        |
| Shunt trip releases          | SHT21 | 101397-101405 |
| Undervoltage releases        | UVT21 | 101406-101407 |

Max. number of installed internal accessories is 2 pcs of AX21, 1 pc of AL21 or EC 21 and 1 pc of a release (SHT21 or UVT21)

External accessories

|                        |                    |                |
|------------------------|--------------------|----------------|
| Direct rotary handle   | RHD21              | 101410         |
| Extended rotary handle | ERH21              | 101409         |
| Remote motor operators | MOD21              | 101411-101415  |
| Terminal cover, short  | TCV21 3P, TCV21 4P | 101439, 102372 |
| Terminal cover, long   | TCE21 3P, TCE21 4P | 101440, 102373 |
| Phase barrier set      | PB21 3P, PB21 4P   | 101441, 102398 |
| Connection terminals   | MC21               | 103705-103708  |
| DIN-rail adaptor       | DRA21              | 106319         |

Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery

### Electrical parameters

|   | Ex9MD1B                  | Ex9MD1S             | Ex9MD1N            | Ex9MD1H            |
|---|--------------------------|---------------------|--------------------|--------------------|
| Tested according to                                     | IEC/EN 60947-2           |                     |                    |                    |
| Rated op. voltage $U_e$                                 | 750 (3P), 1000 V DC (4P) |                     |                    |                    |
| Rated insulation voltage $U_i$                          | 1000 V                   |                     |                    |                    |
| Rated impulse withstand voltage $U_{imp}$               | 8 kV                     |                     |                    |                    |
| Rated ultimate short-circuit breaking capacity $I_{cu}$ | 25 kA / 1000 V DC        | 36 kA / 1000 V DC   | 50 kA / 1000 V DC  | 100 kA / 1000 V DC |
| Rated service short-circuit breaking capacity $I_{cs}$  | 25 kA / 1000 V DC        | 36 kA / 1000 V DC   | 50 kA / 1000 V DC  | 100 kA / 1000 V DC |
| Rated short-circuit making capacity $I_{cm}$            | 52.5 kA / 1000 V DC      | 75.6 kA / 1000 V DC | 105 kA / 1000 V DC | 220kA / 1000 V DC  |
| Rated current   | 16 — 125 A               |                     |                    |                    |
| Overvoltage category                                    | III                      |                     |                    |                    |
| Utilization category                                    | A                        |                     |                    |                    |
| Mechanical service life                                 | 15 000 operation cycles  |                     |                    |                    |
| Electrical service life                                 | 5 000 operation cycles   |                     |                    |                    |
| Maximum frequency of switch. cycles                     | 120 cycles per hour      |                     |                    |                    |
| Total disconnection time at short circuit               | < 2 ms                   |                     |                    |                    |
| Power loss per pole at 125 A                            | 12.5 W                   |                     |                    |                    |

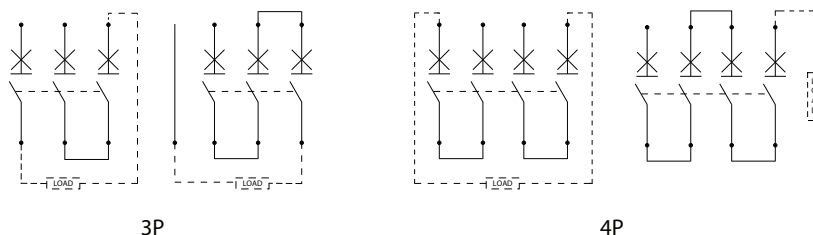
# Technical Data Ex9MD1

## DC Moulded Case Circuit Breakers up to 125 A

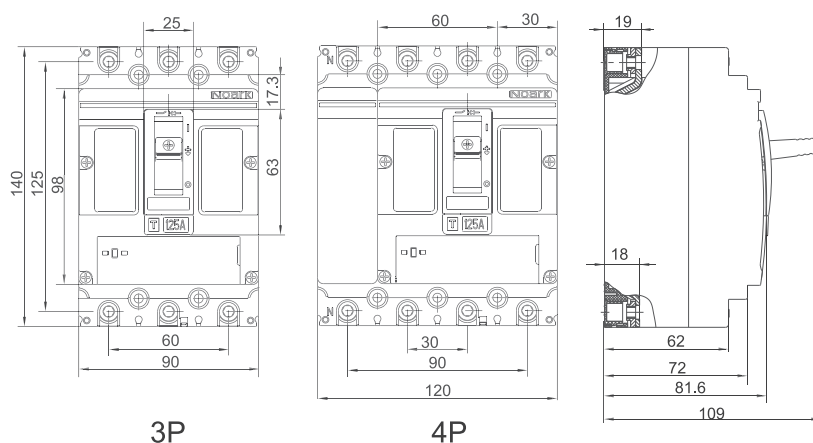
### Mechanical parameters

|                                 |  |
|---------------------------------|--|
| 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                       | M6 screws                                    |
| Busbar thickness                | ≤ 4 mm                                       |
| Busbar width                    | ≤ 14.2 mm                                    |
| Cable lug width                 | ≤ 14.2 mm                                    |
| Fastening torque of terminals   | 10 — 15 Nm                                   |
| Ambient temperature             | -25 — +70 °C                                 |
| Altitude                        | ≤ 2 000 m                                    |
| Relative humidity               | ≤ 50 % at 40 °C, ≤ 90 % monthly average      |
| Resistance to humidity and heat | class 2                                      |
| Pollution degree                | 3  |
| Weight (3P / 4P)                | 1.2 kg / 1.7 kg                              |
| Mounting position               | vertical, can be rotated by 90° in each axis |

### Wiring diagram



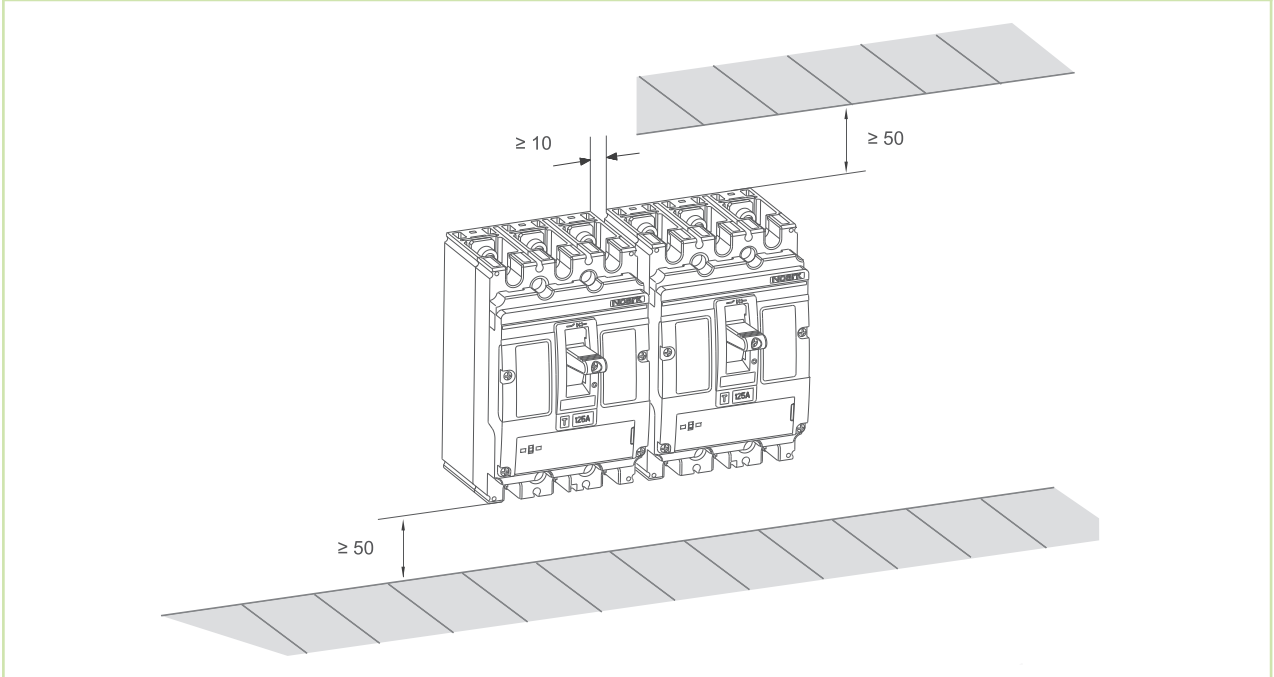
### Dimensions



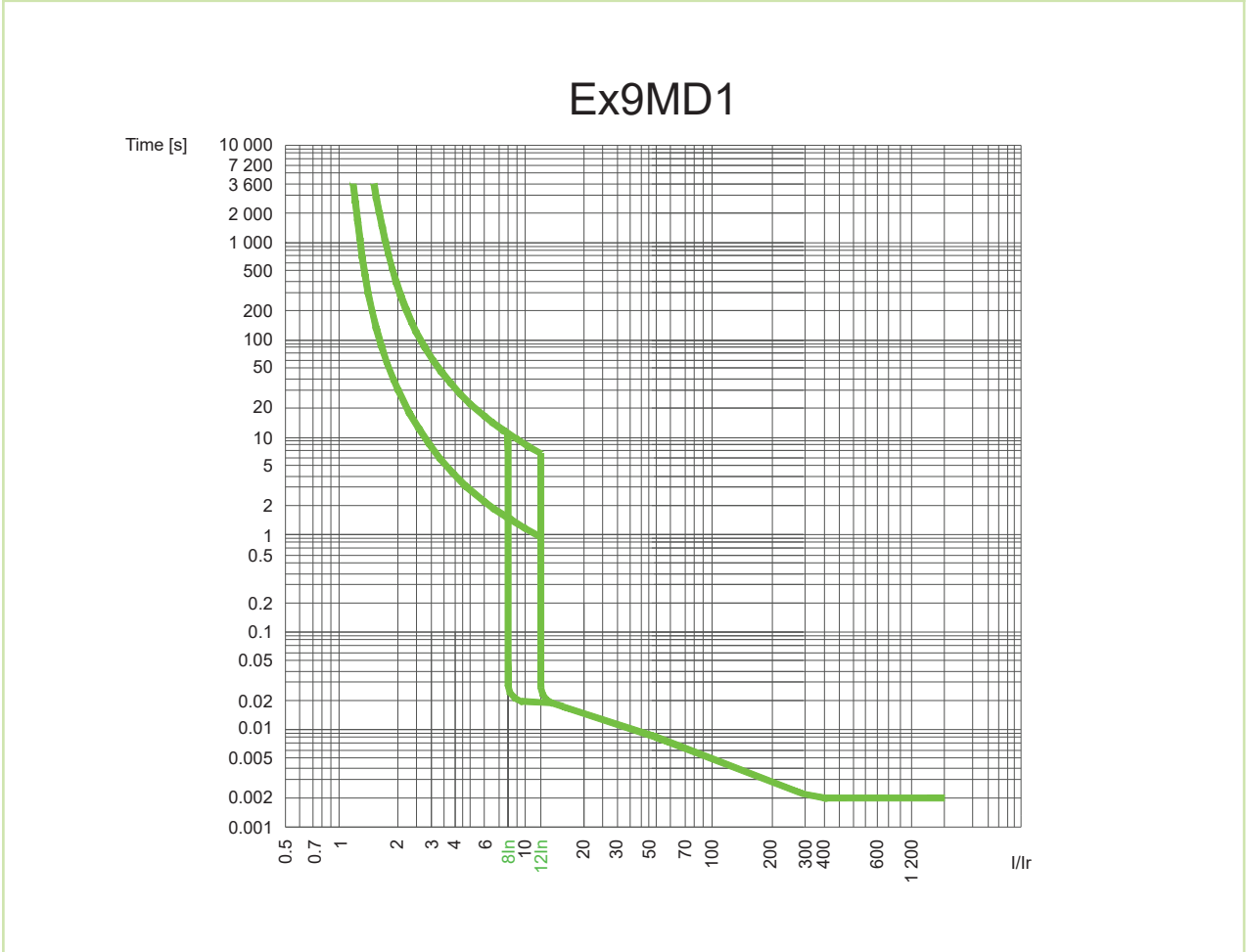
# Technical Data Ex9MD1

## DC Moulded Case Circuit Breakers up to 125 A

### Installation space



### Tripping characteristic





# Technical Data Ex9MD2

## DC Moulded Case Circuit Breakers up to 250 A

### General parameters

Suitable for PV and similar applications

Thermal release adjustable  $(0.8-0.9-1) \times I_n$

Instantaneous short-circuit current release  $(5-6-7-8-9-10) \times I_n$

Internal accessories

|                              |       |               |
|------------------------------|-------|---------------|
| Auxiliary contact unit       | AX21  | 101395        |
| Alarm contact unit           | AL21  | 101396        |
| Early-make auxiliary contact | EC 21 | 106315        |
| Shunt trip releases          | SHT22 | 101416-101424 |
| Undervoltage releases        | UVT22 | 101425-101426 |

Max. number of installed internal accessories is 2 pcs of AX21, 1 pc of AL21 or EC 21 and 1 pc of a release (SHT22 or UVT22)

External accessories

|                        |                    |                |
|------------------------|--------------------|----------------|
| Direct rotary handle   | RHD22              | 101429         |
| Extended rotary handle | ERH22              | 101428         |
| Remote motor operators | MOD22              | 101430-101434  |
| Terminal cover, short  | TCV22 3P, TCV22 4P | 101442, 102374 |
| Terminal cover, long   | TCE22 3P, TCE22 4P | 101443, 102375 |
| Phase barrier set      | PB22 3P, PB22 4P   | 101444, 102399 |
| Connection terminals   | MC22               | 103709-103714  |
| DIN-rail adaptor       | DRA22              | 106320         |

Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery

### Electrical parameters

|   | Ex9MD2B                  | Ex9MD2S             | Ex9MD2N            | Ex9MD2H            |
|---|--------------------------|---------------------|--------------------|--------------------|
| Tested according to                                     | IEC/EN 60947-2           |                     |                    |                    |
| Rated op. voltage $U_e$                                 | 750 (3P), 1000 V DC (4P) |                     |                    |                    |
| Rated insulation voltage $U_i$                          | 1000 V                   |                     |                    |                    |
| Rated impulse withstand voltage $U_{imp}$               | 8 kV                     |                     |                    |                    |
| Rated ultimate short-circuit breaking capacity $I_{cu}$ | 25 kA / 1000 V DC        | 36 kA / 1000 V DC   | 50 kA / 1000 V DC  | 100 kA / 1000 V DC |
| Rated service short-circuit breaking capacity $I_{cs}$  | 25 kA / 1000 V DC        | 36 kA / 1000 V DC   | 50 kA / 1000 V DC  | 100 kA / 1000 V DC |
| Rated short-circuit making capacity $I_{cm}$            | 52.5 kA / 1000 V DC      | 75.6 kA / 1000 V DC | 105 kA / 1000 V DC | 220kA / 1000 V DC  |
| Rated current   | 125 — 250 A              |                     |                    |                    |
| Overvoltage category                                    | III                      |                     |                    |                    |
| Utilization category                                    | A                        |                     |                    |                    |
| Mechanical service life                                 | 15 000 operation cycles  |                     |                    |                    |
| Electrical service life                                 | 5 000 operation cycles   |                     |                    |                    |
| Maximum frequency of switch. cycles                     | 120 cycles per hour      |                     |                    |                    |
| Total disconnection time at short circuit               | < 2 ms                   |                     |                    |                    |
| Power loss per pole at 250 A                            | 18.8 W                   |                     |                    |                    |

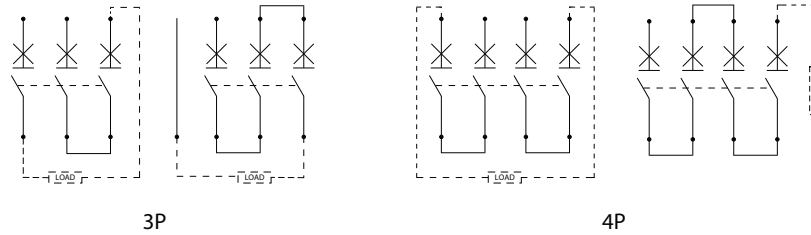
# Technical Data Ex9MD2

## DC Moulded Case Circuit Breakers up to 250 A

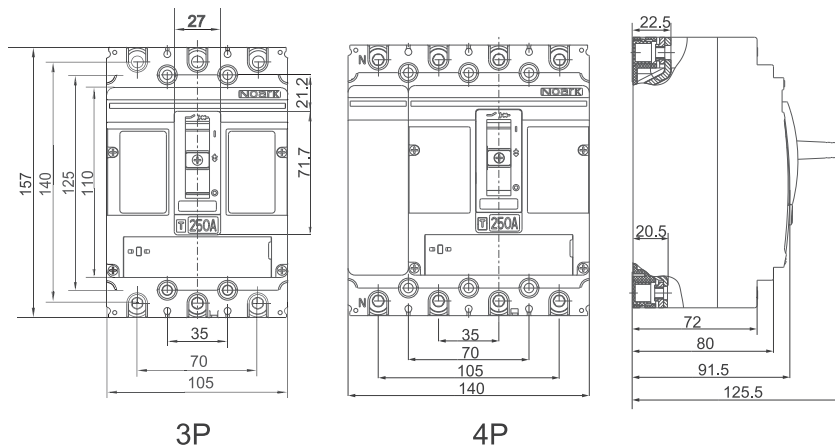
### Mechanical parameters

|                                 |  |
|---------------------------------|--|
| Device width (3P / 4P)          | 105 mm / 140 mm                              |
| Device height                   | 157 mm                                       |
| Device depth                    | 91.5 mm                                      |
| Mounting                        | onto panel                                   |
| Degree of protection            | IP40, IP20 terminals                         |
| Terminals                       | M8 screws                                    |
| Busbar thickness                | ≤ 6 mm                                       |
| Busbar width                    | ≤ 25 mm                                      |
| Cable lug width                 | ≤ 25 mm                                      |
| Fastening torque of terminals   | 15 Nm  |
| Ambient temperature             | -25 — +70 °C                                 |
| Altitude                        | ≤ 2 000 m                                    |
| Relative humidity               | ≤ 50 % at 40 °C, ≤ 90 % monthly average      |
| Resistance to humidity and heat | class 2                                      |
| Pollution degree                | 3  |
| Weight (3P / 4P)                | 1.7 / 2.2 kg                                 |
| Mounting position               | vertical, can be rotated by 90° in each axis |

### Wiring diagram



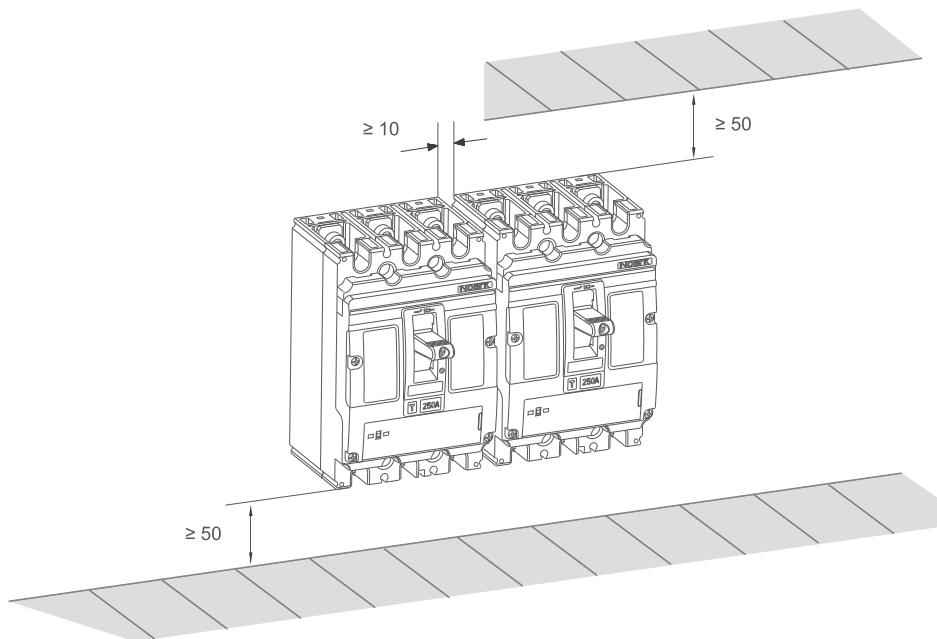
### Dimensions



# Technical Data Ex9MD2

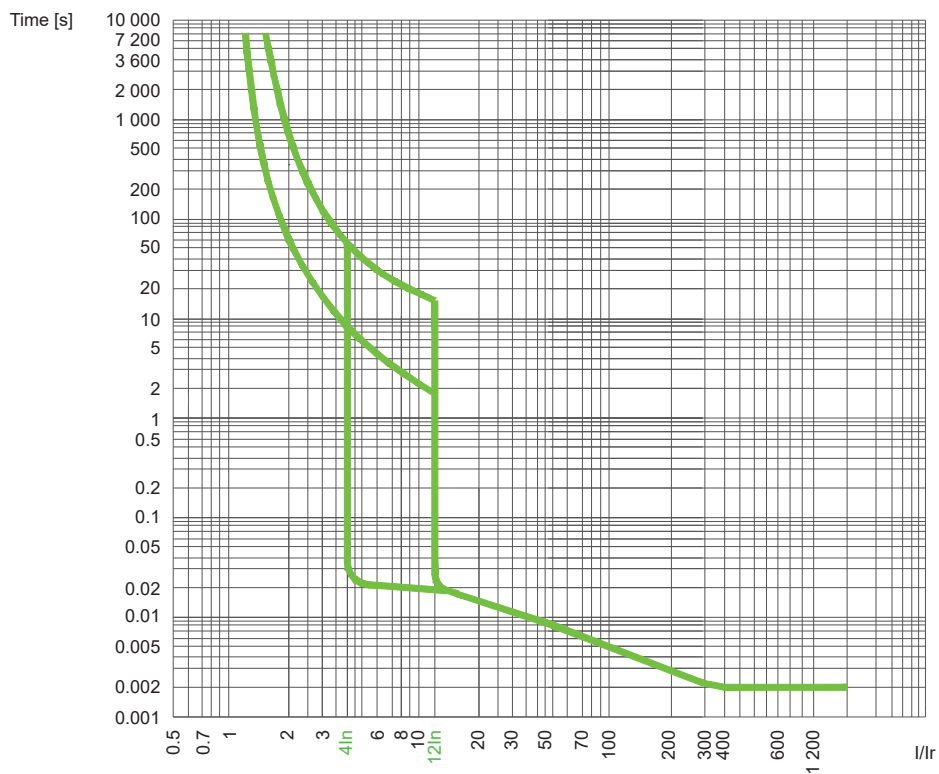
## DC Moulded Case Circuit Breakers up to 250 A

### Installation space



### Tripping characteristic

## Ex9MD2



# Technical Data Ex9MD3

## DC Moulded Case Circuit Breakers up to 400 A

### General parameters

Suitable for PV and similar applications

Thermal release adjustable  $(0.8-0.9-1) \times I_n$

Instantaneous short-circuit current release  $(5-6-7-8-9-10) \times I_n$

Internal accessories

|                              |       |               |
|------------------------------|-------|---------------|
| Auxiliary contact unit       | AX21  | 101395        |
| Alarm contact unit           | AL21  | 101396        |
| Early-make auxiliary contact | EC 23 | 106317        |
| Shunt trip releases          | SHT22 | 101416-101424 |
| Undervoltage releases        | UVT22 | 101425-101426 |

Max. number of installed internal accessories is 3 pcs of AX21, 1 pc of AL21 or EC 23 and 1 pc of a release (SHT22 or UVT22)

External accessories

|                        |                    |                |
|------------------------|--------------------|----------------|
| Direct rotary handle   | RHD23              | 101429         |
| Extended rotary handle | ERH23              | 101428         |
| Remote motor operators | MOD23              | 101430-101434  |
| Terminal cover, short  | TCV23 3P, TCV23 4P | 101442, 102376 |
| Terminal cover, long   | TCE23 3P, TCE23 4P | 101443, 102377 |
| Phase barrier set      | PB23 3P, PB23 4P   | 101444, 102340 |
| Connection terminals   | MC23               | 103715-103722  |

Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery

### Electrical parameters

|   | Ex9MD3B                  | Ex9MD3S             | Ex9MD3N            | Ex9MD3H            |
|---|--------------------------|---------------------|--------------------|--------------------|
| Tested according to                                     | IEC/EN 60947-2           |                     |                    |                    |
| Rated op. voltage $U_e$                                 | 750 (3P), 1000 V DC (4P) |                     |                    |                    |
| Rated insulation voltage $U_i$                          | 1000 V                   |                     |                    |                    |
| Rated impulse withstand voltage $U_{imp}$               | 8 kV                     |                     |                    |                    |
| Rated ultimate short-circuit breaking capacity $I_{cu}$ | 25 kA / 1000 V DC        | 36 kA / 1000 V DC   | 50 kA / 1000 V DC  | 100 kA / 1000 V DC |
| Rated service short-circuit breaking capacity $I_{cs}$  | 25 kA / 1000 V DC        | 36 kA / 1000 V DC   | 50 kA / 1000 V DC  | 100 kA / 1000 V DC |
| Rated short-circuit making capacity $I_{cm}$            | 52.5 kA / 1000 V DC      | 75.6 kA / 1000 V DC | 105 kA / 1000 V DC | 220 kA / 1000 V DC |
| Rated current   | 250 — 400 A              |                     |                    |                    |
| Overvoltage category                                    | III                      |                     |                    |                    |
| Utilization category                                    | A                        |                     |                    |                    |
| Mechanical service life                                 | 10 000 operation cycles  |                     |                    |                    |
| Electrical service life                                 | 2 000 operation cycles   |                     |                    |                    |
| Maximum frequency of switch. cycles                     | 60 cycles per hour       |                     |                    |                    |
| Total disconnection time at short circuit               | < 2 ms                   |                     |                    |                    |
| Power loss per pole at 400 A                            | 25 W                     |                     |                    |                    |

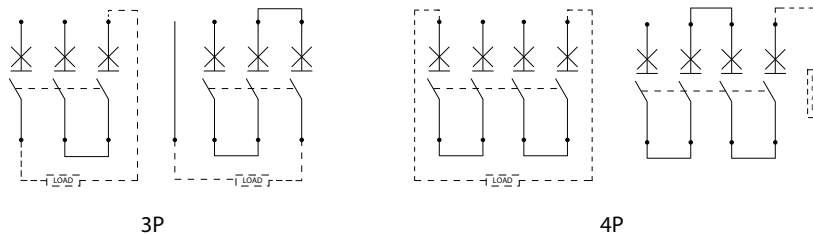
# Technical Data Ex9MD3

## DC Moulded Case Circuit Breakers up to 400 A

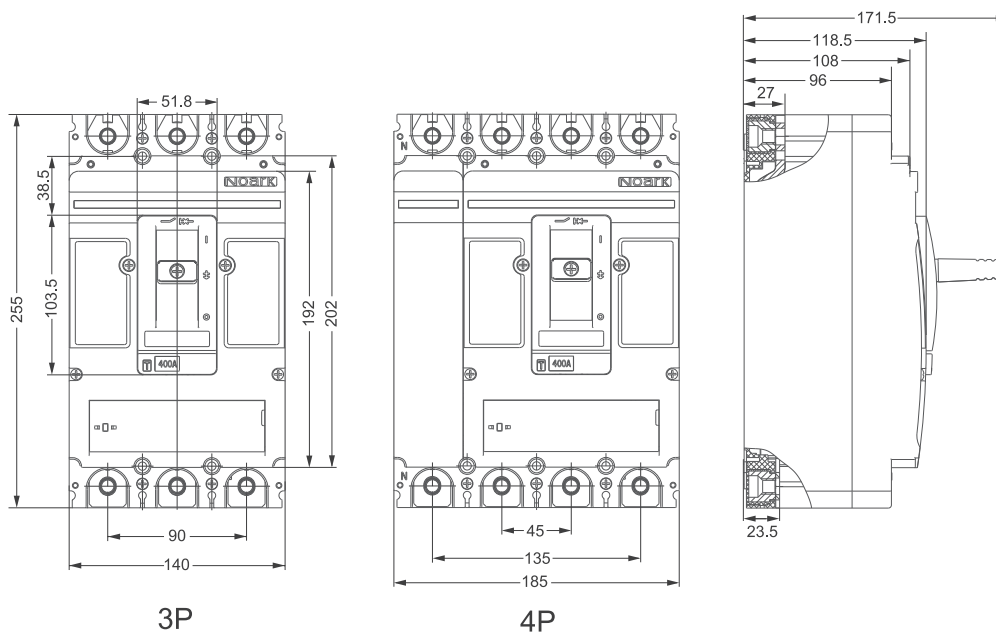
### Mechanical parameters

|                                 |  |
|---------------------------------|--|
| 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 — 30 Nm                                   |
| Ambient temperature             | -25 — +70 °C                                 |
| Altitude                        | ≤ 2 000 m                                    |
| Relative humidity               | ≤ 50 % at 40 °C, ≤ 90 % monthly average      |
| Resistance to humidity and heat | class 2                                      |
| Pollution degree                | 3  |
| Weight (3P / 4P)                | 5 kg / 6.6 kg                                |
| Mounting position               | vertical, can be rotated by 90° in each axis |

### Wiring diagram



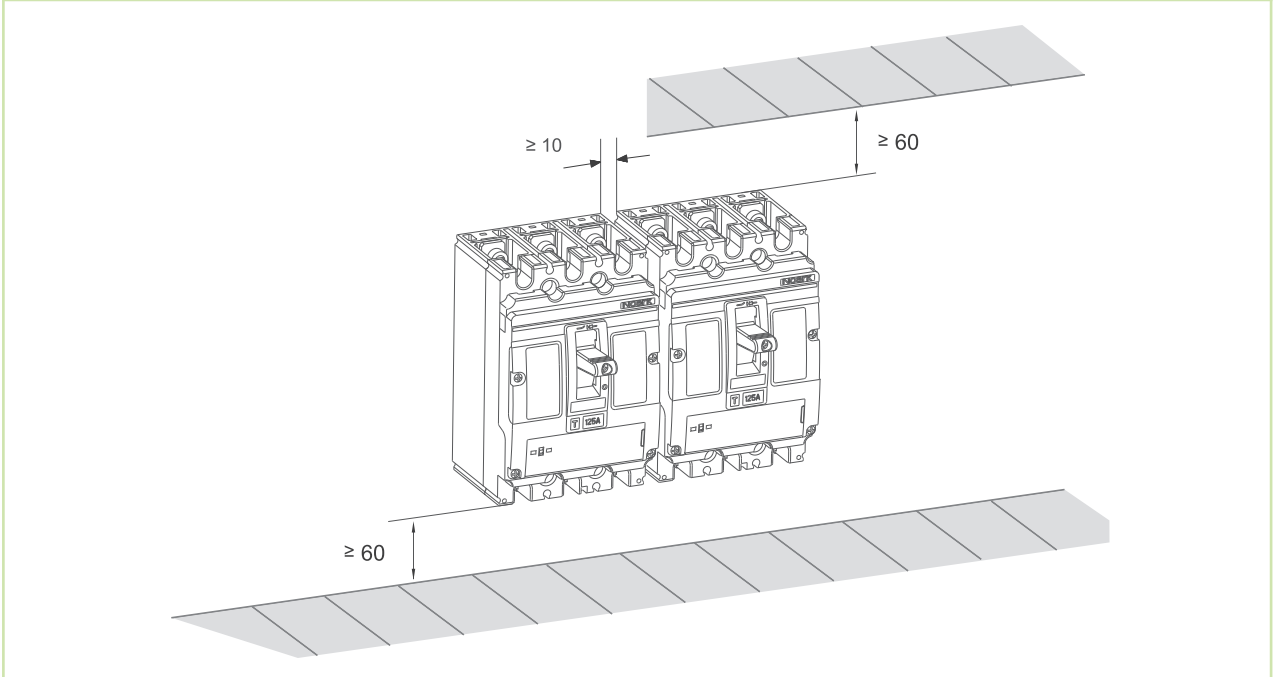
### Dimensions



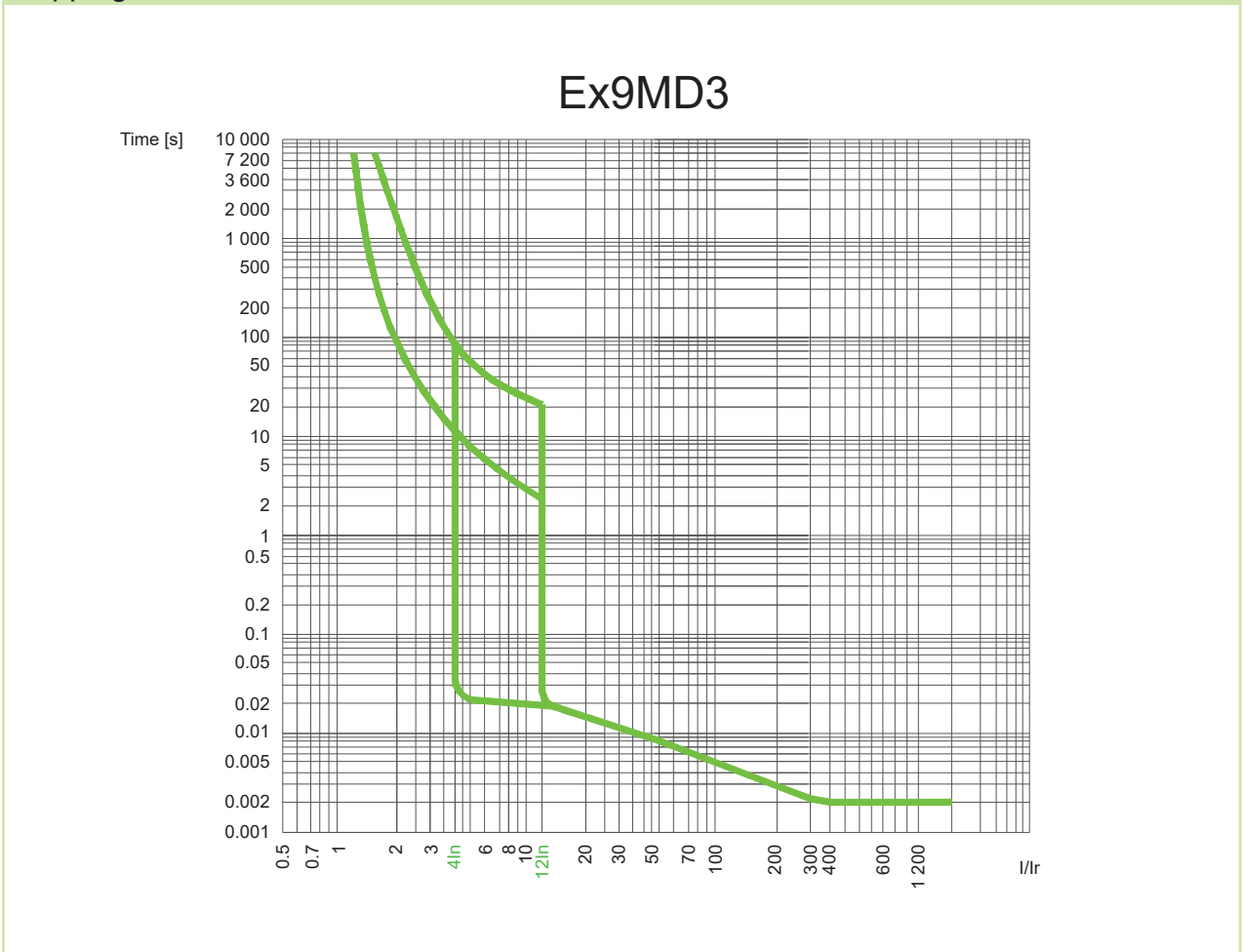
# Technical Data Ex9MD3

## DC Moulded Case Circuit Breakers up to 400 A

### Installation space



### Tripping characteristics



# Technical Data Ex9MD4

## DC Moulded Case Circuit Breakers up to 630 A

### General parameters

Suitable for PV and similar applications

Thermal release adjustable  $(0.8-0.9-1) \times I_n$

Instantaneous short-circuit current release  $(5-6-7-8-9-10) \times I_n$

Internal accessories

|                              |       |               |
|------------------------------|-------|---------------|
| Auxiliary contact unit       | AX21  | 101395        |
| Alarm contact unit           | AL21  | 101396        |
| Early-make auxiliary contact | EC 23 | 106317        |
| Shunt trip releases          | SHT24 | 103723        |
| Undervoltage releases        | UVT24 | 103733-103740 |

Max. number of installed internal accessories is 4 pcs of AX21, 1 pc of AL21 or EC 23 and 1 pc of a release (SHT24 or UVT24)

External accessories

|                        |                    |                |
|------------------------|--------------------|----------------|
| Direct rotary handle   | RHD24              | 103742         |
| Extended rotary handle | ERH24              | 103741         |
| Remote motor operators | MOD24              | 103743-103747  |
| Terminal cover, short  | TCV24 3P, TCV24 4P | 103748, 103750 |
| Terminal cover, long   | TCE24 3P, TCE24 4P | 103749, 104855 |
| Phase barrier set      | PB24 3P, PB24 4P   | 103751, 104856 |
| Connection terminals   | MC24               | 106314         |

Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery

### Electrical parameters

|   | Ex9MD4B                  | Ex9MD4S           | Ex9MD4N           | Ex9MD4H            |
|---|--------------------------|-------------------|-------------------|--------------------|
| Tested according to                                     | IEC/EN 60947-2           |                   |                   |                    |
| Rated op. voltage $U_e$                                 | 750 (3P), 1000 V DC (4P) |                   |                   |                    |
| Rated insulation voltage $U_i$                          | 1000 V                   |                   |                   |                    |
| Rated impulse withstand voltage $U_{imp}$               | 8 kV                     |                   |                   |                    |
| Rated ultimate short-circuit breaking capacity $I_{cu}$ | 25 kA / 1000 V DC        | 36 kA / 1000 V DC | 50 kA / 1000 V DC | 100 kA / 1000 V DC |
| Rated service short-circuit breaking capacity $I_{cs}$  | 25 kA / 1000 V DC        | 36 kA / 1000 V DC | 50 kA / 1000 V DC | 100 kA / 1000 V DC |
| Rated short-circuit making capacity $I_{cm}$            | 25 kA / 1000 V DC        | 36 kA / 1000 V DC | 50 kA / 1000 V DC | 100 kA / 1000 V DC |
| Rated current   | 400 — 630 A              |                   |                   |                    |
| Overvoltage category                                    | III                      |                   |                   |                    |
| Utilization category                                    | A                        |                   |                   |                    |
| Mechanical service life                                 | 10 000 operation cycles  |                   |                   |                    |
| Electrical service life                                 | 2 000 operation cycles   |                   |                   |                    |
| Maximum frequency of switch. cycles                     | 60 cycles per hour       |                   |                   |                    |
| Total disconnection time at short circuit               | < 2 ms                   |                   |                   |                    |
| Power loss per pole at 630 A                            | 31.8 W                   |                   |                   |                    |

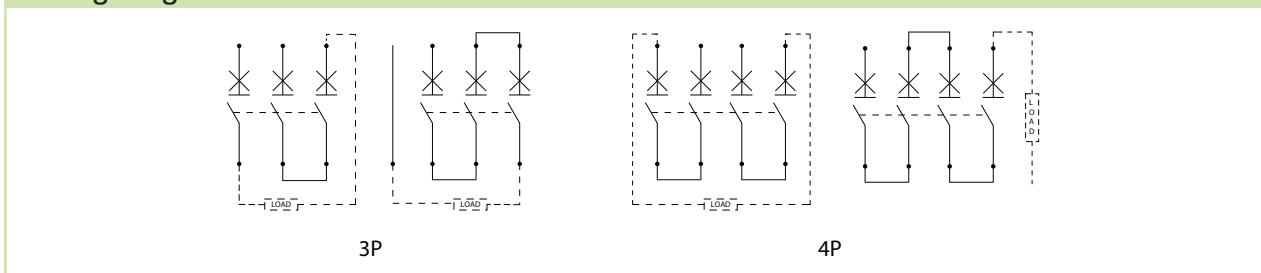
# Technical Data Ex9MD4

## DC Moulded Case Circuit Breakers up to 630 A

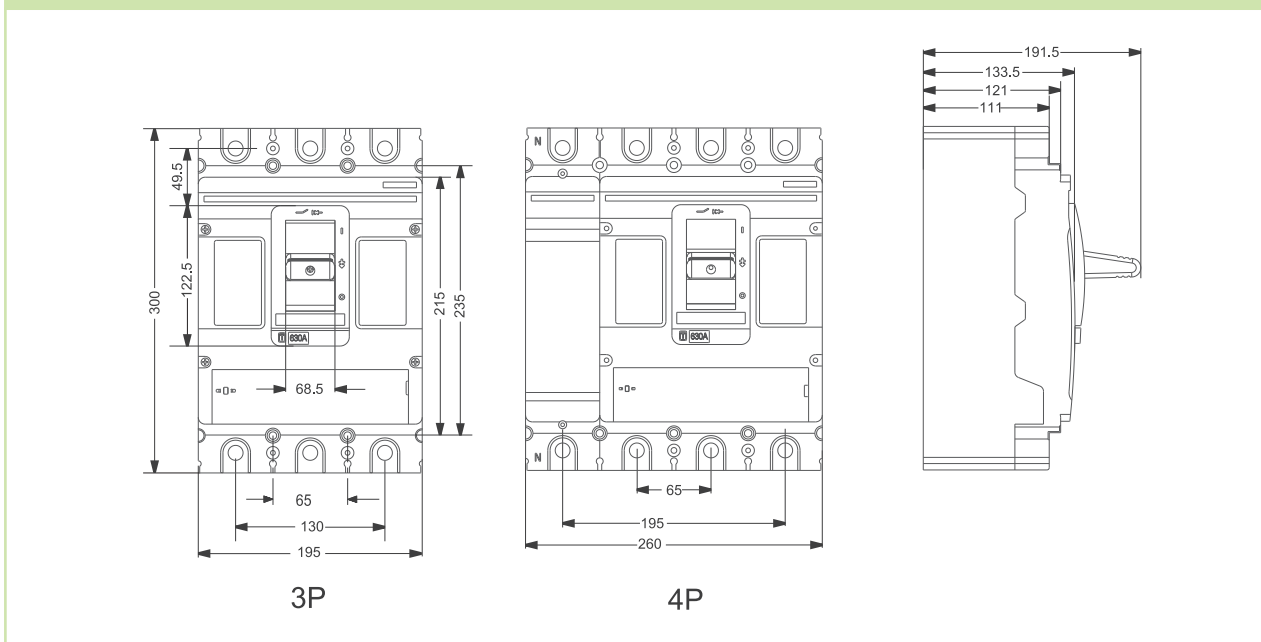
### Mechanical parameters

|                                 |  |
|---------------------------------|--|
| 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                       | M13 screws                                   |
| Busbar thickness                | ≤ 10 mm                                      |
| Busbar width                    | ≤ 50 mm                                      |
| Cable lug width                 | ≤ 50 mm                                      |
| Fastening torque of terminals   | 25 — 30 Nm                                   |
| Ambient temperature             | -25 — +70 °C                                 |
| Altitude                        | ≤ 2 000 m                                    |
| Relative humidity               | ≤ 50 % at 40 °C, ≤ 90 % monthly average      |
| Resistance to humidity and heat | class 2                                      |
| Pollution degree                | 3  |
| Weight (3P / 4P)                | 10,2 kg / 13,5 kg                            |
| Mounting position               | vertical, can be rotated by 90° in each axis |

### Wiring diagram



### Dimensions

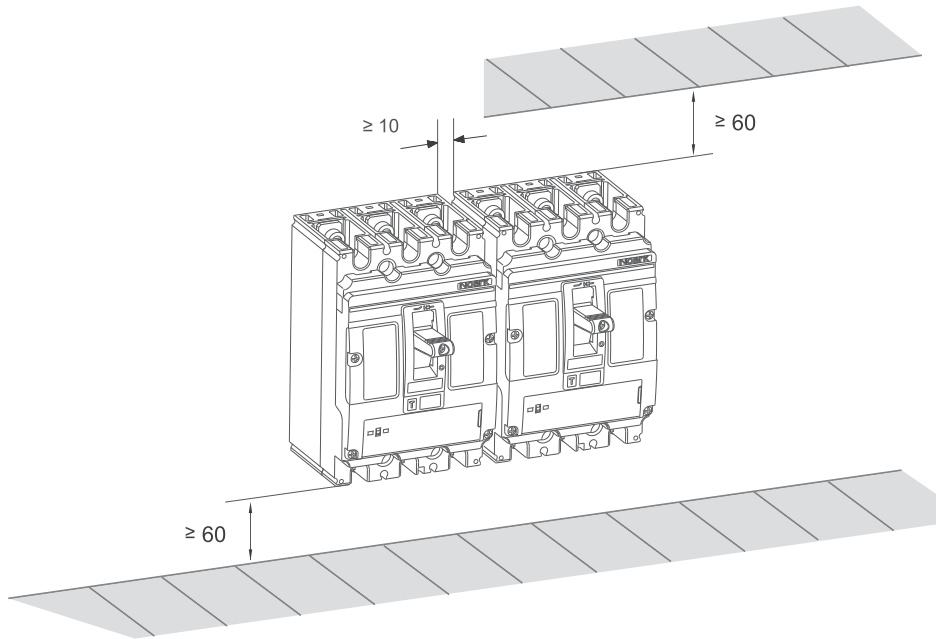




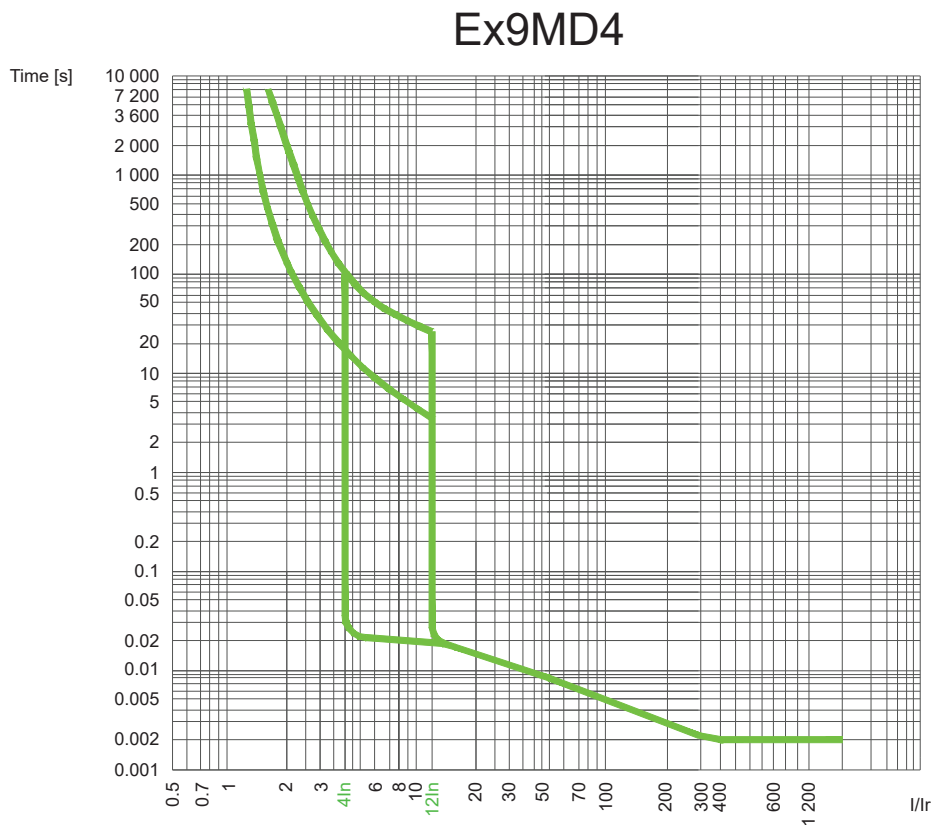
# Technical Data Ex9MD4

## DC Moulded Case Circuit Breakers up to 630 A

### Installation space



### Tripping characteristics



# Technical Data Ex9MD5

## DC Moulded Case Circuit Breakers up to 800 A

### General parameters

Suitable for PV and similar applications

Thermal release adjustable  $(0.8-0.9-1) \times I_n$

Instantaneous short-circuit current release  $(5-6-7-8-9-10) \times I_n$

Internal accessories

|                              |       |               |
|------------------------------|-------|---------------|
| Auxiliary contact unit       | AX21  | 101395        |
| Alarm contact unit           | AL21  | 101396        |
| Early-make auxiliary contact | EC 23 | 106317        |
| Shunt trip releases          | SHT24 | 103723-103730 |
| Undervoltage releases        | UVT24 | 103733-103740 |

Max. number of installed internal accessories is 4 pcs of AX21, 1 pc of AL21 or EC 23 and 1 pc of a release (SHT24 or UVT24)

External accessories

|                        |                    |                |
|------------------------|--------------------|----------------|
| Direct rotary handle   | RHD24              | 103742         |
| Extended rotary handle | ERH24              | 103741         |
| Remote motor operators | MOD24              | 103743-103747  |
| Terminal cover, short  | TCV24 3P, TCV24 4P | 103748, 103750 |
| Terminal cover, long   | TCE24 3P, TCE24 4P | 103749, 104855 |
| Phase barrier set      | PB24 3P, PB24 4P   | 103751, 104856 |
| Connection terminals   | MC24               | 106314         |

Mounting screws, interconnection busbars as well as phase barriers in the scope of delivery

### Electrical parameters

|   | Ex9MD5B                  | Ex9MD5S           | Ex9MD5N           | Ex9MD5H            |
|---|--------------------------|-------------------|-------------------|--------------------|
| Tested according to                                     | IEC/EN 60947-2           |                   |                   |                    |
| Rated op. voltage $U_e$                                 | 750 (3P), 1000 V DC (4P) |                   |                   |                    |
| Rated insulation voltage $U_i$                          | 1000 V                   |                   |                   |                    |
| Rated impulse withstand voltage $U_{imp}$               | 8 kV                     |                   |                   |                    |
| Rated ultimate short-circuit breaking capacity $I_{cu}$ | 25 kA / 1000 V DC        | 36 kA / 1000 V DC | 50 kA / 1000 V DC | 100 kA / 1000 V DC |
| Rated service short-circuit breaking capacity $I_{cs}$  | 25 kA / 1000 V DC        | 36 kA / 1000 V DC | 50 kA / 1000 V DC | 100 kA / 1000 V DC |
| Rated short-circuit making capacity $I_{cm}$            | 25 kA / 1000 V DC        | 36 kA / 1000 V DC | 50 kA / 1000 V DC | 100 kA / 1000 V DC |
| Rated current   | 630 — 800 A              |                   |                   |                    |
| Overvoltage category                                    | III                      |                   |                   |                    |
| Utilization category                                    | A                        |                   |                   |                    |
| Mechanical service life                                 | 5 000 operation cycles   |                   |                   |                    |
| Electrical service life                                 | 1 000 operation cycles   |                   |                   |                    |
| Maximum frequency of switch. cycles                     | 60 cycles per hour       |                   |                   |                    |
| Total disconnection time at short circuit               | < 2 ms                   |                   |                   |                    |
| Power loss per pole at 400 A                            | 51.2 W                   |                   |                   |                    |

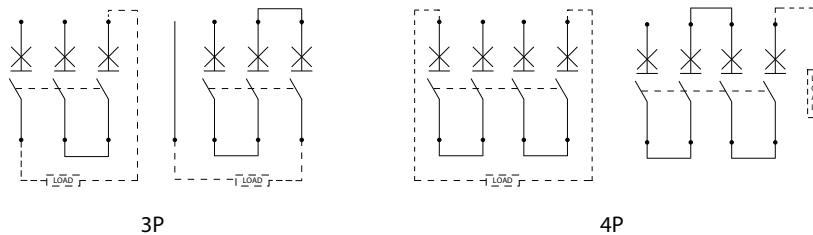
# Technical Data Ex9MD5

## DC Moulded Case Circuit Breakers up to 800 A

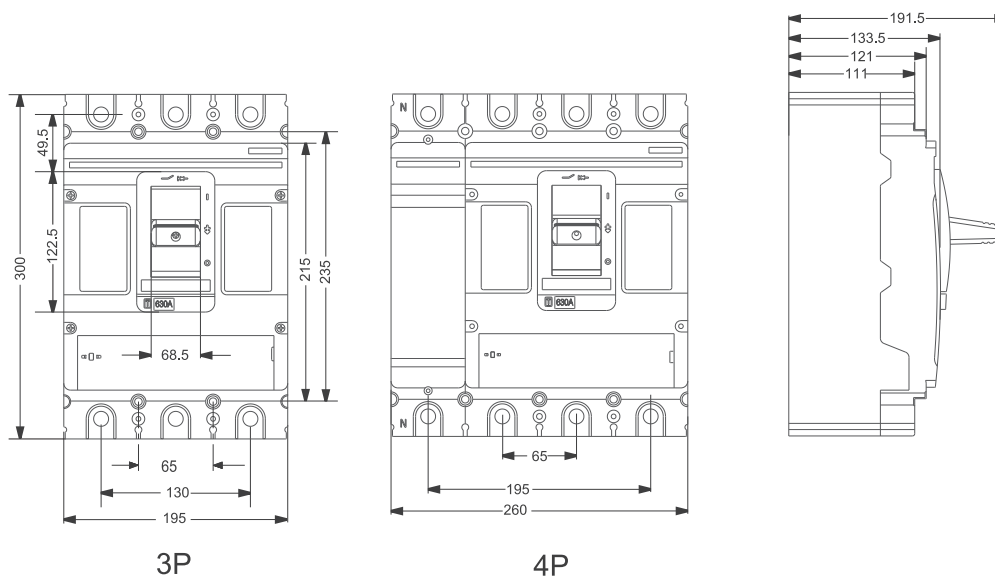
### Mechanical parameters

|                                 |  |
|---------------------------------|--|
| 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                       | M13 screws                                   |
| Busbar thickness                | ≤ 10 mm                                      |
| Busbar width                    | ≤ 50 mm                                      |
| Cable lug width                 | ≤ 50 mm                                      |
| Fastening torque of terminals   | 25 — 30 Nm                                   |
| Ambient temperature             | -25 — +70 °C                                 |
| Altitude                        | ≤ 2 000 m                                    |
| Relative humidity               | ≤ 50 % at 40 °C, ≤ 90 % monthly average      |
| Resistance to humidity and heat | class 2                                      |
| Pollution degree                | 3  |
| Weight (3P / 4P)                | 10,2 kg / 13,5 kg                            |
| Mounting position               | vertical, can be rotated by 90° in each axis |

### Wiring diagram



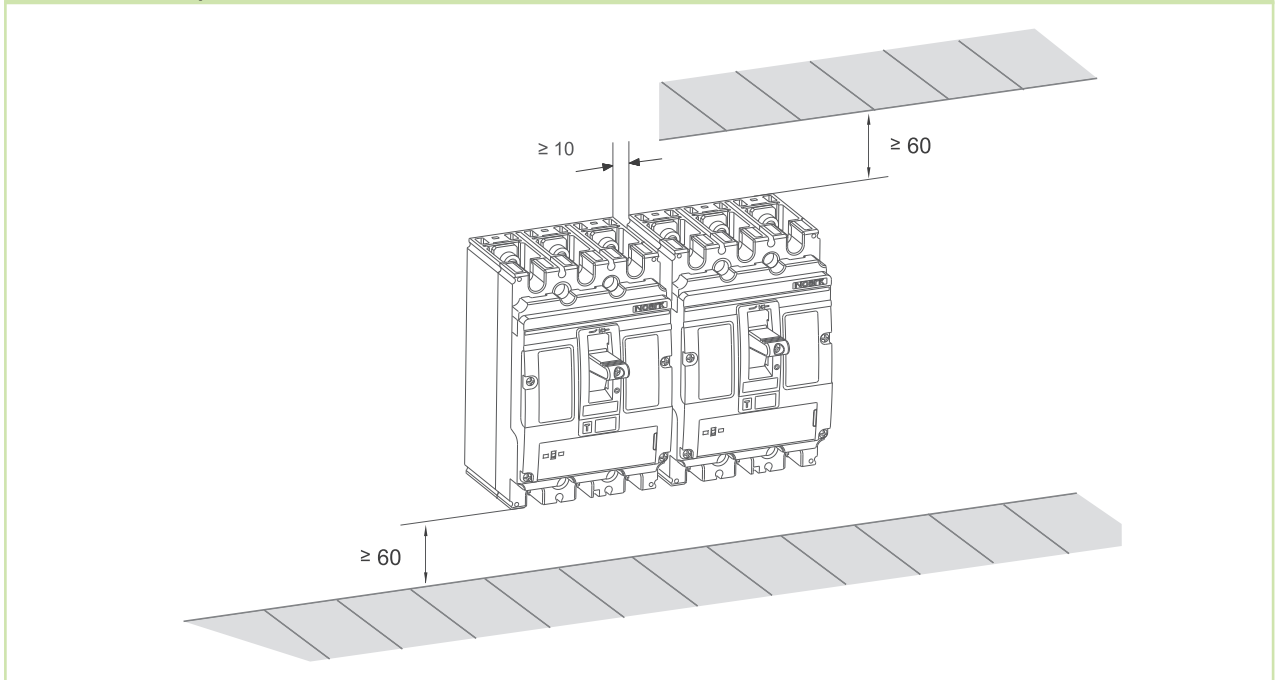
### Dimensions



# Technical Data Ex9MD5

## DC Moulded Case Circuit Breakers up to 800 A

### Installation space



### Tripping characteristics

