DC Breaker Hotline
888-949-8337 email
sales@omni2controls.com

OMNI2CONTROLS

Noark

# Product Guide

# Low Voltage DC Series






**Excellent Products. Exceptional Value.**

# ABOUT US

**NOARK Electric** is a global manufacturer of low-voltage electrical components for industrial applications. We specialize in motor controls and circuit protection for original equipment manufacturers. Our mission is to provide customers with the highest quality products at an exceptional value and back them with world-class service and support. Every NOARK product is tested and certified to the highest industry standards.

### Research and Development

The entire portfolio of high-quality NOARK products is designed for manufacturing and assembly. Each component is developed in-house by our engineering team to meet the strictest standards and performance requirements.This dedication to excellence has led to the development of patented technology found in many of our products.

### World-class Manufacturing

After being thoroughly tested, approved and certified – each NOARK product is sent into production at ourstate-of-the-art manufacturing facilities. This allows us to maintain strict quality control standards throughout the manufacturing process. In addition, NOARK Electric adheres to a policy of environmental protection and sustainability.

### North American Distribution

NOARK's distribution centers are located in Pomona, CA and Kitchener, ON, with the aim of ensuring prompt and reliable deliveries of the entire product range to our customers all over North America. Our supply chain team works closely with our factories and logistics partners to ensure the availability of our products on the North American market and provide logistics services on the level which our customers expect.

NOARK Electric is a wholly subsidiary of the largest electrical manufacturing group in Asia with over 30 thousand employees and sales revenue of $16 billion USD. We have corporate facilities in Los Angeles, Shanghai and Prague to service the requirements of individual markets and countries.

| 140+ | 300+ | 20 | 22 | 3 | 10,000,000+ | 30,000+ |
|---|---|---|---|---|---|---|
| Countries | Overseas Distributors | Overseas Subsidiaries | Logistics Centers | R & D Centers | Sq.Ft. Manufacturing Space | Employees Worldwide |

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# NOARK Low Voltage DC Series

Product Quick Reference

| | Product Family | Standards | Rated Current (A) | Rated Voltage (VDC) | Interrupting Capacity (kA) | Short Time Withstand Current (kA) | Poles |
|---|---|---|---|---|---|---|---|
|  | ASD16 DC | UL489-SC UL489B CSA C22.2 No. 5 | 600-1600 | 1500 | - | 75 | 4 |
|  | ASD25 DC | UL489-SC UL489B CSA C22.2 No. 5 | 800-2500 | 1500 | - | 150 | 4 |
|  | M1 | UL489 IEC60947-2 CSA C22.2 No. 5 | 15~150 | Up to 600 | Up to 50 | - | 1,2,3 |
|  | M2 | UL489 IEC60947-2 CSA C22.2 No. 5 | 100~250 | Up to 600 | Up to 50 | - | 1,2,3 |
|  | M3 | UL489 IEC60947-2 CSA C22.2 No. 5 | 250~400 | Up to 600 | Up to 65 | - | 2*,3 |
|  | M4 | UL489 IEC60947-2 CSA C22.2 No. 5 | 400~600 | Up to 600** | Up to 65 | - | 2*,3 |
|  | M5 | UL489 IEC60947-2 CSA C22.2 No. 5 | 600~800 | Up to 600** | Up to 65 | - | 2*,3,4 |
|  | M1PVS | UL489B CSA C22.2 No. 5 | 15~100 | 1000 | 10 | - | 3 |
|  | M1D | UL489 IEC60947-2 CSA C22.2 No. 5 | 15~150 | 600 | - | 50 | 2,3 |
|  | M2D | UL489 IEC60947-2 CSA C22.2 No. 5 | 100~250 | 600 | - | 50 | 2,3 |
|  | M3D | UL489 IEC60947-2 CSA C22.2 No. 5 | 250~400 | 600 | - | 65 | 2,3 |
|  | M4D | UL489 IEC60947-2 CSA C22.2 No. 5 | 400~600 | 600 | - | 65 | 2,3 |

*3-pole Case
**Poles connected in series.

# NOARK Low Voltage DC Series

Product Quick Reference

| | Product Family | Standards | Rated Current (A) | Rated Voltage (VDC) | Interrupting Capacity (kA) | Short Time Withstand Current (kA) | Poles |
|---|---|---|---|---|---|---|---|
|  | M5D | UL489<br>IEC60947-2<br>C22.2 No. 5 | 800 | 600 | - | 65 | 2,3,4 |
|  | MV2DPV | UL489B<br>GB/T 14048.2<br>IEC 60947 -2 | 200 | 1500 | 10 | 10 | 2 |
|  | MD3HVF | UL489B<br>CSA C22.2 No. 5 | 200~400 | 1500 | 18 | - | 2 |
|  | Ex9MV2S-DC1500V | IEC/EN 60947-2,<br>GB/T1404802 | 250 | 1500 | 10 | - | 2 |
|  | B1N | UL489<br>IEC60947-2<br>CSA C22.2 No. 5-16 | 0.5~63 | 1-pole: 60<br>2-pole: 125 | 10 | - | 1,2 |
|  | B1D | UL489<br>IEC60947-2<br>CSA C22.2 No. 5-16 | 0.5~63 | 1-pole: 125<br>2-pole: 250 | 10 | - | 1,2 |
|  | B1E | UL1077<br>IEC60947-2<br>CSA C22.2 No. 235 | 0.5~63 | 1-pole: 60<br>2-pole: 125 | 10 | - | 1,2 |
|  | B1B | UL489<br>IEC60947-2<br>CSA C22.2 No.5 | 25~63 | 2-pole: 500<br>4-pole: 1000 | 10 | - | 2,4 |
|  | Ex9BP | UL1077<br>IEC60947-2 | 10~63 | 2-pole: 300<br>4-pole: 600 | 6 | - | 2,4 |
|  | 9FP Fuse & Fuse Holder | CSA C22.2 No. 4248 | 2~30 | 1500 | 20 | - | 1 |
|  | F30 Fuse Holder | UL4248-19<br>CSA C22.2 No. 4248 | Max. 30 | Up to 1000 | Up to 200 | - | 1,2,3,4 |

# ASD Series Disconnect Switch - 1500Vdc

Product Overview

## Features

The Noark Electric ASD16 and ASD25 DC disconnect switches meet the requirements of UL 489B for photovoltaic systems and UL 489 Supplement SC for batteries and energy storage systems. The ASD16 model supports current ratings ranging from 600A to 1600A, with a short-time withstand current capability up to 75kA at 1500Vdc. The ASD25 model is available in current ratings from 800A to 2500A and can handle a short-time withstand current up to 150kA at 1500Vdc. The ASD25 features a poles-in-series design and offers jumper connection options for both grounded and ungrounded systems. In contrast, the ASD16, also with a poles-in-series design, provides factory-configured jumper connections specifically for ungrounded systems. Both models are supported by a 1-year limited warranty.

A

- Ambient temperature: 40°C~70°C
- Mechanical endurance up to 12500 (without maintenance), electrical endurance up to 200 (without maintenance)
- An extensive range of electrical and mechanical accessories are available for ASD16 and ASD25DC disconnects and are fully compliant with the applicable UL standard
- Compact design for limited space in combiner box or the solar inverter

## Certifications

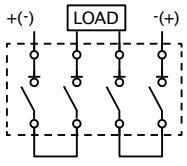
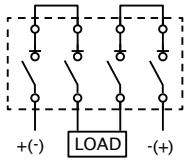
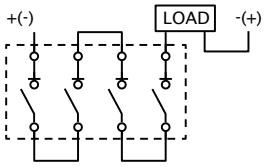
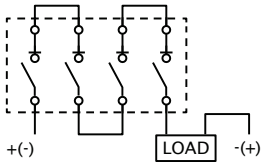
- UL489 Supplement SC Listed, File No. E529658
- UL489B Listed, File No. E529657
- CSA Standards C22.2 No. 5, File No. E529658
- CSA Standards C22.2 No. 5, File No. E529657

# ASD Series Disconnect Switch - 1500Vdc

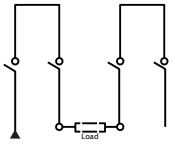
Technical Data

| Description | | ASD16 DC | ASD25 DC |
|---|---|---|---|
| Rated Voltage (Vdc) | | 1500Vdc (4-pole in series) | |
| Rated current (A) | | 600/800/1000/1200/1600 | 800/1000/1250/1600/2000/2500 |
| Pole | | 4-pole | |
| Mounting type | | Fixed | |
| Standard | | UL489 / UL489B | |
| Frame | | 1600A | 2500A |
| Short time withstand current (kA) | | 75 | 125/150 |
| Operating time (ms) | Max. Breaking Time | ≤30 | ≤30 |
| | Max. Closing Time | ≤60 | ≤70 |
| Operations | Mechanical | 12,500 | 12,500 |
| | Electrical | 500 | 2000 |
| Dimension HxWxD (mm) | 600A~1200A | 473 x 364 x198.5 | - |
| | 800A~2000A | - | 392 x 465 x 433 |
| | 2500A | - | 392 x 465 x 477 |
| Accessories* | Shunt Trip (SHT) | ■ | |
| | Closing Trip (XF) | ■ | |
| | Motor Operator (MD) | ■ | |
| | Auxiliary Contacts (AX) | ■ | |
| | Under Voltage Trip (UVT) | ■ | |
| | Phase Barrier (PHS) | ■ | |
| | OFF Position Keylock (KLK) | ■ | |
| | Door Frame (CDP) | ■ | |
| | Ready To Close Contact (PF) | ■ | |
| | Pushbutton Locking Cover (VBP) | ■ | |
| | Mechanical Interlocking With Cables (IPA) | ■ | |
| | Jumper (JPR) | ■ | |

## Connection Type

| Connection | Upper Supply | Lower Supply |
|---|---|---|
| Configuration C** |  |  |
| Configuration D*** |  |  |

## Wire Connection

| Lower Supply | |
|---|---|
| Jumper busbar connection type |  |

* Accessories are ordered separately except the Jumpers which are factory installed but field customizable.
** Type C: Only suitable for ungrounded systems
*** Type D: Can be used in grounded or ungrounded systems in photovoltaic systems

# M Series Molded Case Circuit Breaker - 600Vdc

Product Overview

NOARK Electric offers a wide range of Molded Case Circuit Breakers for DC applications in five frame sizes. The M-Series DC MCCB come with multiple frame selections and pole number options: M1-150A, M2-250A, M3 - 400A, M4 - 600A and M5 - 800A.

## Features

- Rated current from 15~800A
- Rated voltage from 250Vdc~600Vdc
- High-breaking capacity and a patented arc extinguishing design
- Fixed and adjustable trip unit settings
- Line and load lugs installed standard

B

## Accessories

- Alarm switch and auxiliary contact
- Shunt and under-voltage trip
- Rotary type handle
- Flange type handle

## Certifications

- UL489 listed, File No. E355392
- CSA Standards C22.2 No. 5, File No. E355392
- IEC/EN 60947-2
- CE Compliant

# M Series Molded Case Circuit Breaker - 600Vdc

## Technical Data

| | | M1 | | | | | | | M2 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated Current (A) | | | 15~150 | | | | | | 100~250 | | | | | |
| Number of Poles | | 1 | 2 | | | 2*, 3 | | | 1 | 2 | | 2*,3 | | |
| Breaker Type | | N | S | N | H | S | N | H | N | S | N | S | N | H |
| Rated Voltage | Vdc | 250 | 500 | | | 600** | | | 250 | 500 | | 600** | | |
| **Interrupting Capacity (kA rms)** | | | | | | | | | | | | | | |
| Circuit Breaker Ratings UL 489 CSA C22.2 (kA rms) Vac 50/60 Hz | 250Vdc 1-pole | 25 | - | | | | | | 25 | - | | | | |
| | 500Vdc 2-pole | - | 20 | 35 | 50 | 20 | 35 | 50 | - | 20 | 35 | 20 | 35 | 50 |
| | 600Vdc 3-pole | - | | | | 20 | 35 | 50 | - | | | 20 | 35 | 50 |
| Current Rating (A) @ 104 °F (40 °C) | | 15~150 | | | | | | | 100~250 | | | | | |
| Thermal-Magnetic Trip Units (Fixed) | A = Adjustable<br>T = Thermal<br>F = Fixed<br>M = Magnetic | FT/ FM | 15~45 FT/FM 50~150A AT/FM | | | 15~45A FT/FM 50~100A AT/FM 125~150A AT/AM | | | FT/ FM | AT/AM | | | | |
| **Accessories** | | | | | | | | | | | | | | |
| Alarm Switch | | - | ■ | | | ■ | | | - | ■ | | ■ | | |
| Auxiliary Contact | | | | | | | | | | | | | | |
| Shunt Trip | | | | | | | | | | | | | | |
| Under-Voltage Trip | | | | | | | | | | | | | | |
| Handle Lock | | | | | | | | | | | | | | |
| Handle Operators | | | | | | | | | | | | | | |
| Mechanical Interlock | | - | | | | | | | - | | | | | |
| Motor Operator | | | | | | | | | | | | | | |
| Flange Handle | | | | | | | | | | | | | | |
| Terminal Cover and Kits | | | | | | | | | | | | | | |
| **Connection** | | | | | | | | | | | | | | |
| Bus Bar Connection | | ■ | | | | ■ | | | ■ | | | ■ | | |
| Lug Line/Load Side Connection | | | | | | | | | | | | | | |
| Rear Connection | | | | | | | | | | | | | | |
| Plug-In | | - | | | | | | | - | | | | | |

* 2 pole in a 3-pole case
** 600Vdc only available for 3-pole and 4-pole

# M Series Molded Case Circuit Breaker - 600Vdc

## Technical Data

| | | M3 | | | M4 | | | M5 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Rated Current (A) | | 250~400 | | | 400~600 | | | 600~800 | | |
| Number of Poles | | 2*,3 | | | | | | 2*,3,4 | | |
| Breaker Type | | S | N | H | S | N | H | S | N | H |
| Rated Voltage | Vdc | | | | | 600** | | | | |
| **Interrupting Capacity (kA rms)** | | | | | | | | | | |
| Circuit Breaker Ratings UL 489 CSA C22.2 (kA rms) Vac 50/60 Hz | 500 Vdc 2 Poles | 35 | 50 | 65 | 35 | 50 | 65 | 35 | 50 | 65 |
| | 600 Vdc 3 Poles | 35 | 50 | 65 | 35 | 50 | 65 | 35 | 50 | 65 |
| Current Rating (A) @ 104 °F (40 °C) | | 250~400 | | | 400~600 | | | 600~800 | | |
| Thermal-Magnetic Trip Units (Fixed) | A = Adjustable<br>T = Thermal<br>F = Fixed<br>M = Magnetic | AT / AM | | | | | | | | |
| **Accessories** | | | | | | | | | | |
| Alarm Switch | | ■ | | | | | | ■ | | |
| Auxiliary Contact | | | | | | | | | | |
| Shunt Trip | | | | | | | | | | |
| Under-Voltage Trip | | | | | | | | | | |
| Handle Lock | | | | | | | | | | |
| Flange Handle | | | | | | | | | | |
| Mechanical Interlock | | | | | | | | | | |
| Motor Operator | | | | | | | | | | |
| Handle Operators | | | | | | | | | | |
| Terminal Cover and Kits | | | | | | | | - | | |
| **Connection** | | | | | | | | | | |
| Bus Bar Connection | | ■ | | | ■ | | | ■ | | |
| Lug Line/Load Side Connection | | | | | | | | | | |
| Plug-In | | | | | - | | | - | | |
| Rear Connection | | | | | ■ | | | | | |

* 2 pole in a 3 pole case
** 600 Vdc only available for 3 pole and 4 pole

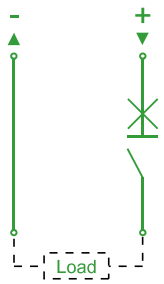
# M Series Molded Case Circuit Breaker - 600Vdc

Technical Data

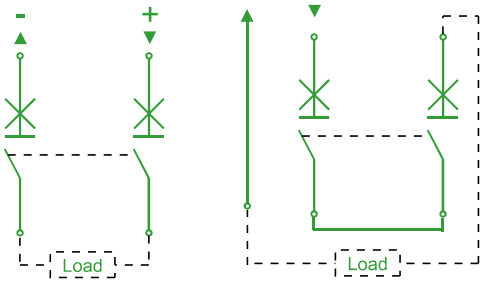
| | | M1 | M2 | M3 | M4 | M5 |
|---|---|---|---|---|---|---|
| Operational Ambient Termperature | | -40 to 70℃ | | | | |
| Mechanical Operating Cycles | | 10,000 | | 8,000 | | 3,000 |
| Electrical Operating Cycles | | 6,000 | | 5,000 | | 500 |
| Dimensions LxWxD in (mm) | 1-pole | 6.46x1.4x3.33 (164x35x84.5) | 7.17×1.57×3.47 (182×40×88) | - | | |
| | 2-pole | 6.46x2.44x3.33 (164x62x84.5) | 7.17×2.95×3.47 (182×75×88) | | | |
| | 2-pole* | 6.46x3.54x3.33 (164x90x84.5) | 7.17x4.13x3.47 (182x105x88) | 11.22x5.51x4.59 (285x140x116.5) | 12.32x7.68x5.43 (313x195x138) | - |
| | 3-pole | | | | | 16.18x7.68x7.58 (411x195x192.5) |
| | 4-pole | - | | | | 16.18x10.2x7.58 (411x260x192.5) |
| Weight of Unit lb (kg) | 1-pole | 1.47 (0.67) | 1.76 (0.8) | - | | |
| | 2-pole | 2.53 (1.15) | 3.3 (1.5) | | | |
| | 2-pole* | 3.17 (1.44) | 3.75 (1.70) | 8.97 (4.07) | 20.94 (9.5) | 27.8 (12.5) |
| | 3-pole | 3.68 (1.67) | 4.41 (2.00) | 13.45 (6.1) | 25.35 (11.5) | 33.18 (15.05) |
| | 4-pole | - | | | | 43.43 (19.7) |
| **Connection** | | | | | | |
| Bus Bar Connection | | ■ | | | | |
| Lug Line/Load Side Connection | | | | | | |

## M1 - M5 Interruption Polarity fo DC Application

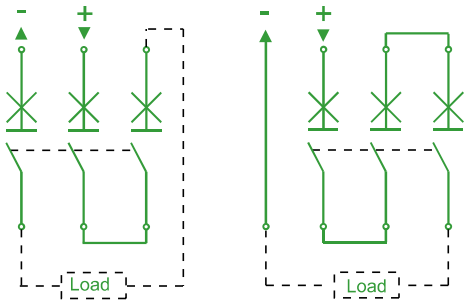
1 Pole




2 Poles




3 Poles




* 2-pole in a 3-pole case

# M Series Molded Case Circuit Breaker - 1000Vdc

Product Overview

NOARK M1PVS is a molded case breaker for DC application with UL489B listing and offers solutions for Solar PV and Electric Vehicle Charging applications

## Features

- Rated current from 15A~100A in a 3-pole configuration
- Interrupting capacity of 10kA @ 1000Vdc
- Thermal magnetic trip units for protection of overload and short-circuit photovoltaic system
- Available for reverse-feed applications
- Can be used in grounded, ungrounded systems

C

## Certifications

- UL489B Listed, File No. E513573
- CSA Standards C22.2 No. 5, File No. E513573

5 years LIMITED WARRANTY

# M Series Molded Case Circuit Breaker - 1000Vdc

Technical Data

## M1PVS Specifications

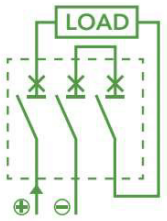
| Description | | M1PVS |
|---|---|---|
| Rated Service Current | | 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80,100 |
| Number of Poles | | 3 |
| Rated Service Voltage | | 1000Vdc |
| Short-Circuit Interrupting Rating @1000Vdc | | 10 |
| Trip Unit | | TM |
| Ambient Temperature | | -20°C~50°C |
| Certification | | UL 489B |
| Mechanical Life | | 10,000 |
| Electrical Life (Operations @1000Vdc) | | 1,000 |
| Dimensions (mm/in) | M1PVS-A/B | W 90 (3.5) |
| | | D 84.5 (3.33) |
| | | H 201 (7.91) |
| | M1PVS-C/D | W 90 (3.5) |
| | | D 84.5 (3.33) |
| | | H 238 (9.37) |
| Weight (With Jumper) | M1PVS-A/B (kg/lbs) | 1.50/3.29 |
| | M1PVS-C/D (kg/lbs) | 1.659/3.64 |
| **Accessories** | | |
| Alarm Switch | | ■ |
| Auxiliary Contact | | ■ |
| Shunt Trip | | ■ |
| Under-Voltage Trip | | ■ |
| Handle Lock | | ■ |
| Flange Handle | | ■ |
| Rotary Handle | | ■ |
| Mechanical Interlock | | ■ |
| Motor Operator | | ■ |
| **Terminations** | | |
| Connections | | Jumpers |
| Cable Selection | | Cu |

# M Series Molded Case Circuit Breaker - 1000Vdc

Technical Data

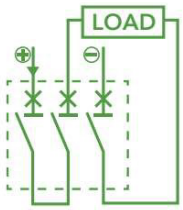
## M1PVS Jumper Connection Type and Trip Unit

Connection A



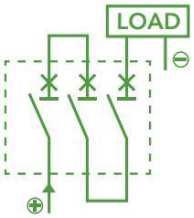

ungrounded system wiring

Connection B



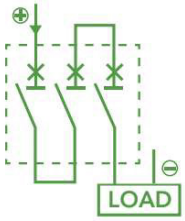

ungrounded system wiring

Connection C




For both grounded and ungrounded

Connection D




For both grounded and ungrounded

**M1VPS**

- Fixed Thermal: 15~45A rated current
- Adjustable Thermal: 50~100A rated current
- Adjustable: 0.8~1 x In
- Fixed Magnetic: 150~1000A tripping current


| M1PVS Trip Unit | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $I_R$ | 15A | 20A | 25A | 30A | 35A | 40A | 45A | 50A | 60A | 70A | 80A | 100A |
| Adjustable Thermal Overload Protection | 0.8 x In | | | | | | | | 40 | 48 | 56 | 64 | 80 |
| | 0.9 x In | | | | | | | | 45 | 54 | 63 | 72 | 90 |
| | 1.0 x In | | | | | | | | 50 | 60 | 70 | 80 | 100 |
| Fixed Magnetic Short Circuit Protection | $I_i$ | 15A | 20A | 25A | 30A | 35A | 40A | 45A | 50A | 60A | 70A | 80A | 100A |
| | Fixed 1.0 x In | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 600 | 700 | 800 | 1000 |

# M Series Molded Case Circuit Breaker – 1500Vdc (UL)

Product Overview

MD3HVF is Noark's 2-pole MCCB specifically engineered for 1500Vdc rated voltage applications. Tailored for the dynamic requirements of the new energy industry, particularly in photovoltaic systems with current range from 200A to 400A. MD3HVF shares a comprehensive range of internal and external accessories with existing M series breakers, ensuring a seamless integration that guarantees reliability and safety

## Features

- Rated Voltage 1500Vdc
- Rated current from 200A~400A
- Ambient temperature -40°C ~ 70°C
- Fixed thermal-magnetic trip unit

D

## Accessories

- Alarm and Auxiliary Contact
- Shunt trip
- Handle Operating Mechanism
- Motor Operator
- Terminal Cover and Phase Barrier

## Certifications

- UL489B Listed, File No. E529657
- CSA Standards C22.2 No. 5.1, File No. E529657

# M Series Molded Case Circuit Breaker – 1500Vdc (UL)

Technical Data

| Description | MD3HVF |
|---|---|
| Rated Current In (A), 50° C | 200~400 |
| Number of Poles | 2 |
| Frame Current (A) | 400 |
| Rated Operating Voltage Un (Vdc) | 1500 |
| Rated Interrupting Capacity (kAIC) | 18 |
| Trip Unit | Thermal-Magnetic |
| Ambient Temperature | -40°C ~ 70°C |
| Certification | UL489B |
| Installation Type | Fixed |
| **Accessories** | |
| Alarm and Auxiliary Contact | ■ |
| Shunt Trip | ■ |
| Handle Operating Mechanism | ■ |
| Motor Operator | ■ |
| Terminal Cover and Phase Barrier | ■ |

# M Series Molded Case Circuit Breaker – 1500Vdc (IEC)

Product Overview

Ex9MV2S-PV/DC 1500V is a DC molded case circuit breaker designed for photovoltaic applications, with rated current from 125A to 250A. The rated ultimate short circuit interrupting capacity is 10kA, suitable for low- voltage power distribution circuits with rated operating voltage less than 1500Vdc, which has a wide application in photovoltaic equipment such as combiner boxes and box transformer. The breaker is designed with double insulation, which improved insulation performance and operational safety. Also, reverse feed connection and modularized accessories make it more convenient to be installed and operated.

5 years LIMITED WARRANTY

## Features

- Rated current from 125A~250A
- Rated Voltage less than 1500Vdc
- Improved insulation performance and operational safety
- Reverse feed connection

## Accessories

- Alarm Switch
- Auxiliary Contact
- Shunt Trip
- Under-Voltage Trip
- Handle Lock
- Flange Handle
- Rotary Handle
- Mechanical Interlock
- Motor Operator

## Certifications

- IEC 60947-2

# M Series Molded Case Circuit Breaker – 1500Vdc (IEC)

Technical Data

| Description | | | Ex9MV2S-PV/DC 1500V |
|---|---|---|---|
| Breaker Type | | | S |
| Recognized Standards | | | IEC/EN 60947-2, GB 14048.2 |
| Frame Current (A) | | | 250 |
| Number of Poles | | | 2 |
| Rated Insulation Voltage Ui (V) | | | 1500 |
| Rated Impulse withstand voltage Uimp (kV) | | | 12 |
| Rated Operating Voltage Un (V) | | | 1500 |
| Rated Current In (A), 40° | | | 125/160/200/225/250 |
| Rated ultimate short circuit interrupting Capacity Icu (kA) | | DC1500V, 2-stage series connection | 10 |
| Rated ultimate operating interrupting Capacity Ics (%Icu) | | DC1500V, 2-stage series connection | 100% |
| Disconnection Function | | | Yes |
| Utilization Category | | | A |
| Protection Grade | | | IP20 |
| Standards Recognition | | | CCC/TUV/CE/CB |
| Operations (C-Ocycle) | Mechanical | | 10,000 |
| | Electrical | | 2,000 |
| Trip Unit | | | Thermal-Magnetic |
| Short Circuit Protection | | | 10In |
| Operating Ambient Temperature (°) | | | -40°C ~ 70°C |
| Installation Type | | | Fixed |
| Connection Type | | | Bus Bar and Lug Line/Load Side |
| Geometric Dimensions (mm) | Width | | 135 |
| | Height | | 200 |
| | Depth | | 103 |
| **Accessories** | | | |
| Alarm Switch | | | ■ |
| Auxiliary Contact | | | ■ |
| Shunt Trip | | | ■ |
| Under-Voltage Trip | | | ■ |
| Handle Lock | | | ■ |
| Flange Handle | | | ■ |
| Rotary Handle | | | ■ |
| Mechanical Interlock | | | ■ |
| Motor Operator | | | ■ |

# M Series Molded Case Switches - 600Vdc

Product Overview

NOARK Electric offers 5 types of M-Series Molded Case Switches for DC application. The rated current of M1-150A, M2-250A, M3-400A, M4-600A and M5-800A.

## Features

- Rated Voltage up to 600Vdc
- Instantaneous trip ability and a patented arc extinguishing design
- High-quality compact modular design
- Suitable for power source protection and emergency breaking switch

## Accessories

- Alarm switch and auxiliary contact
- Shunt and under-voltage trip
- Rotary type handle
- Flange type handle

## Certifications

- UL489 Listed, File No. E355396
- CSA Standards C22.2 No. 5, File No. E355396
- IEC/EN 60947-2
- CE Compliant

5 years LIMITED WARRANTY

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# M Series Molded Case Switches - 600Vdc

Technical Data

| Description | | M1D | M2D | M3D | M4D | M5D |
|---|---|---|---|---|---|---|
| Rated Current (A) | | 100 - 150 | 225 - 250 | 400 | 600 | 800 |
| Number of Poles | | 2,3 | | 3 | | |
| Switch Type | | M1D | M2D | M3D | M4D | M5D |
| Rated Voltage 50/60 Hz | Vac | 600 | | | | |
| | Vdc | 600 | | | | |
| **Withstand Rating* (kA rms)** | | | | | | |
| Circuit Breaker Ratings UL 489- -C-SA C22.2 (kA rms) Vac 50/60 Hz | 500Vdc 2-pole | 35 | 35 | 50 | 50 | 50 |
| | 600Vdc 3-pole | 35 | 35 | 50 | 50 | 50 |
| **Connection** | | | | | | |
| Line/Load Lug Connection | | ■ | | | | |
| Mechanical Operating Cycles | | 10,000 | | 8,000 | | |
| Electrical Operating Cycles | | 6,000 | | 5,000 | | |
| Dimensions LxWxD in | | 6.46 x 3.54 x 3.33 | 7.17 x 4.13 x 3.47 | 11.22 x 5.51 x 4.59 | 12.32 x 7.68 x 5.43 | 16.18 x 7.68 x 7.58 |
| Weight of Unit lb | 2-pole | 3.17 | 3.75 | - | - | - |
| | 3-pole | 3.68 | 4.41 | 13.45 | 25.35 | 33.18 |
| Lugs lb-in (N.m) | | 89 (10) | 230 (23) | 310 (35) | | 398 (45) |

*NOTE: Molded Case Switches do not provide branch circuit protection and must be protected by an upstream OCPD (fuse or circuit breaker). The withstand rating is provided for coordination purposes and refers to the fault, at rated voltage, that the molded case switch can withstand without damage when protected by a circuit breaker or fuse with and equal continuous current rating

# M Series Molded Case Switches - 1500Vdc

Product Overview

MV2DPV200 can be used for the is olation of DC circuits, while also providing load current interruption and energy dis connection protection. MV2DPV200 Molded Case Switch is designed for application in new energy industry, can be used in the DC side of PV inverter in a photovoltaic system, and in the DC side of ES converter in an ESS system, or any other conditions where the DC voltage are up to 1500Vdc.

## Features

- Rated Voltage up to 1500Vdc
- Rated Current from 125 to 200A
- High-quality compact modular design
- Suitable for power source protection and emergency breaking switch


## Accessories

- Shunt Trip
- Auxiliary Contact
- Alarm Contact
- Handle Operating Mechanism
- Extended Shaft
- Extended Rotary Handle

5 years LIMITED WARRANTY

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## Certifications

- UL489B Listed File No. E529657
- CE Compliant
- CCC
- RoHS

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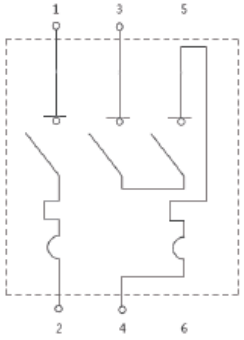
# M Series Molded Case Switches - 1500Vdc

Technical Data

| | MV2DPV200 |
|---|---|
| Number of Poles | 2P |
| Rated Voltage Ue | DC1500V |
| Rated | 12kV |
| Rated Current In | 125 to 200A |
| Withstand Capacity 1cm | 10kA@1500Vdc |
| Mechanical Endurance | 10000 cycles |
| Electrical Endurance | 2000 cycles |
| Operational Temperature | -40°C ~ +70°C |
| Operational Humidity | Relative humidity should not exceed 50% when the temperature is +40°C;<br>Relative humidity can be higher in lower temperatures, e.g. 90% at +20°C<br>Measures should be taken to address condensation caused by temperature changes. |
| Altitude | ≤ 2000m, de-rating is required above 2000m |
| Pollution Degree | 3 |
| Installation Category | III |
| Width (mm) | 135 |
| Height (mm) | 200 |
| Depth (mm) | 103 |
| Isolation Function | Yes |
| Operation Indicator | ON/OFF Sign |
| Weight (kg) | 3.2kg |
| **Accessories** | |
| Alarm and Auxiliary Contact | ■ |
| Shunt Trip | ■ |
| Handle Operating Mechanism | ■ |
| Extended Rotary Shaft | ■ |
| Extended Rotary Handle | ■ |

## Wiring Diagram



# B Series Miniature Circuit Breaker

Product Overview

## Features

The B1N, B1D & B1B series DC miniature circuit breakers provide over-current protection for main and branch circuits, with a rated short-circuit current of 10kA and operating voltages ranging from 60Vdc (1-pole) to 1000Vdc (4-pole in series). The rated operational current ranges from 0.5A through 63A. B1N & B1D are UL489 listed while B1B is UL489 SC listed. The B1E & Ex9BP series miniature circuit breakers are supplementary protectors (UL1077 recognized) with operational voltages between 60Vdc (1-pole) to 600Vdc (4-pole in series). The maximum rated current is from 0.5A through 125A while the interrupting capacity is 10kA (B1E) and 6kA (Ex9BP) respectively.

- Breakers can be mounted on standard 35mm DIN rail
- Field installable shunt trip and auxiliary switch
- Contact position indicator (red/green)

5 years LIMITED WARRANTY

## Accessories

- Alarm Switch
- Auxiliary Contact
- Shunt Trip
- Under-Voltage Trip
- DIN Rails
- Extended Rotary Handles
- MCB Padlock (Lock Off)
- Surface and Flush Mount Clips
- Comb Busbars
- Mechanical Interlock

## Certifications

- B1N, B1D:
  UL489 Listed, File no. E355392;
  CSA Standards C22.2 No. 5 File no E355392
- B1B: UL489 SC Listed, File no. E532291
- B1E, Ex9BP:
  UL1077 recognized, File no. E355391;
  CSA-C22.2 No. 235 File no. E355391

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# B Series Miniature Circuit Breaker

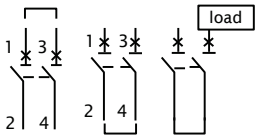
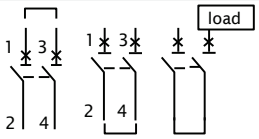
Technical Data

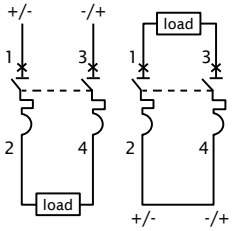
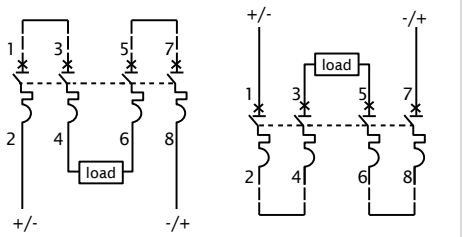
| Description | | B1N | | B1D | | B1E | | | | B1B | | Ex9BP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pole | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 4 | 2 | 4 |
| Rated Current (A) | | 0.5~63 | | 0.5~63 | | 0.5~63 | | 80~125 | | 25~63 | | 10~63 | |
| Rated Operational Voltage (Vdc) | | 60 | 125 | 125 | 250 | 60 | 125 | 110 | 220 | 500 | 1000 | 300 | 600 |
| Instantaneous Tripping Type | | B/C/D | | C/D | | B/C/D | | 8~12In | | C | | C | |
| Inverse Time-Delay Over-Current Release Type | | Thermal-magnetic | | | | | | | | | | | |
| Rated Insulation Voltage (Vdc) | | 500 | | 500 | | 500 | | 500 | | 1000 | | 1000 | |
| Rated Impulse Withstand Voltage (kV) | | 6 | | 6 | | 6 | | 8 | | 6 | | 4 | 6 |
| Short Circuit Current Rating (kA) | | 10 | | 10 | | 10 | | 10 | | 10 | | 6 | |
| Operations | Electrical | 10,000 | | 6,000 | | 6,000 | | "1,500 (80~100A)<br>1,000 (125A)" | | 1,000 | | 6,000 | |
| | Mechanical | 20,000 | | 10,000 | | 20,000 | | "8,000 (80~100A)<br>7,000 (125A)" | | 20,000 | | 20,000 | |
| Operation Temperature Range | | -30°C ~ +75°C | | | | | | | | | | | |
| Pollution Degree | | Class III | | | | | | | | | | | |
| Altitude ft (m) | | Does not exceed 6,561 (2,000) | | | | | | | | | | | |
| Atmospheric Conditions | | +20°C ≤90% | | | | | | | | | | | |
| | | +40°C ≤50% | | | | | | | | | | | |

# B Series Miniature Circuit Breaker

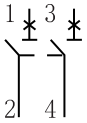
Wiring Diagram

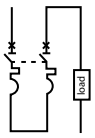
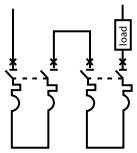
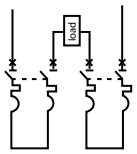
## UL489 Miniature Circuit Breaker

| Pole | 1 | 2 |
|---|---|---|
| B1N |  |  |
| B1D |  |  |

| Pole | 2 | 4 |
|---|---|---|
| B1B |  |  |

## UL1077 Miniature Circuit Breaker

| Pole | 1 | 2 | 4P |
|---|---|---|---|
| B1E |  |  | - |

| | Pole | 2 | 4 |
|---|---|---|---|
| Ex9BP | For both grounded and ungrounded |  |  |
| | ungrounded |  |  |

# 9FP Series Fuse & Fuse Holder

Product Overview

## Features

9FP series DC fuses and fuse holders are mainly used in DC junction box, string inverters, and converter of energy storage system in order to protect and isolate photovoltaic cell modules, arrays and chemical energy (storage) batteries. They are suitable for new energy fields with UL certificate.

- Rated current up to 30A
- Rated operational voltage of 1500Vdc
- 22mm installation size per pole
- Standard TH35 rail mounting


## Certifications

- UL 248-19 Listed, File No. E522690 (Fuse)
- UL4248-19 Listed, File No. E522691 (Fuse holder)
- CSA C22.2 No. 4248, File No. E522690 (Fuse)
- CSA C22.2 No. 4248, File No. E522691 (Fuse holder)
- IEC/EN 60269-6

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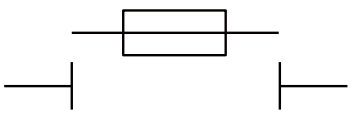
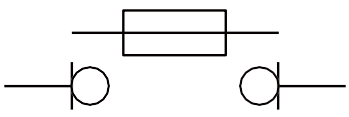
# 9FP Series Fuse & Fuse Holder

## Technical data

| Description | 9FP-30H series DC fuse |
|---|---|
| Conformed Standard | UL 248 |
| Maximum Power Loss (W) | ≤9 |
| Voltage Rating (V DC) | 1500 |
| Amperage Rating (A) | 2, 4, 6, 8 ,10, 12, 15, 16, 20, 25, 30 |
| Interrupting rating (kA) | 20 |
| Dimensions (mm) | 10*85 |

| Description | | 9FP30H Fuse holder |
|---|---|---|
| Conformed Standard | | UL 4248-19 |
| Rated Operational Voltage Ue (V DC) | | 1500 |
| Rated Current In (A) | | up to 30A |
| Maximum Power Loss(W) | | ≤9 |
| Protection Degree | | IP20 |
| Mounting | | TH35-7.5/DIN35 rail |
| Operation Temperature Range°C | | -35~+70 |
| Resistance to Wet and Heat | | Class II |
| Altitude ft (m) | | Does not exceed 6,561 (2,000) |
| Atmospheric Conditions | | At 68 °F (+20°C), the relative humidity does not exceed 95% |
| | | At 104 °F (+40°C), the relative humidity does not exceed 50% |
| Installation class | | Class III |
| Installation Environment | | No significant vibration or shock |
| Wiring | Screw Size | M5 |
| | Tightening Torque (N.m) | 2-3.5 |
| | Wiring Range ($mm^2$) | 1~25 |

## Wiring Diagram

| Isolator | Disconnect Switch |
|---|---|
|  |  |

# F30 Series Fuse Holder

Product Overview

F30 series Fuse holder can be used in variety of scenarios: F30M and F30CC series can be used in the conventional electrical field, while F30P series is dedicated to the photovoltaic industry. F30 series is matched with a variety of fuses and has a high interrupting capacity.


- Rated current up to 30A
- The interrupting capacity of F30M series and F30CC series is up to 200kA while F30P is 50kA.
- Available option for blown-fuse indicating light, which is convenient for quick inspection and identification.

## Certifications


- F30M:
  - UL4248-1 Listed, File no. E530645
  - CSA Standard C22.2 No. 4248, File no. E530645
- F30CC:
  - UL4248-4 Listed, File no. E530645
  - CSA Standard C22.2 No. 4248, File no. E530645
- F30P:
  - UL4248-19 Listed, File no. E522691
  - CSA Standard C22.2 No. 4248, File no. E522691

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5 years LIMITED WARRANTY

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# F30 Series Fuse Holder

Technical data

| Fuse Holder | F30M | F30CC | F30P |
|---|---|---|---|
| Conformed Standard | UL4248-1 | UL4248-4 | UL4248-19 |
| Rated Operational Voltage | 600Vac/dc | 600Vac/dc | 1000Vdc |
| Rated Current (A) | Max 30A | | |
| SCCR Rating | 200kA | 200kA | 50kA |
| Number of Poles | 1,2,3,4 | | 1,2 |
| Maximum Power Loss (W) | 3.2W (per pole) | | |
| Type | With & Without Indication Light | | |
| Protection Degree | IP20 | | |
| Mounting | 35mm DIN-Rail | | |
| Operating Temperature (°C) | -30°C to 85°C | | |
| Altitude ft (m) | Does not exceed 6,561 (2,000) | | |
| Humidity Resistance | At 68°F (+20°C), the relative humidty does not exceed 95% | | |
| | At 104°F (+40°C), the relative humidty does not exceed 50% | | |
| Wet and Heat resistance | Class II | | |
| Pollution Degree | Class III | | |
| Connection | Copper conductor, 18-6 AWG (0.75-10mm$^2$) | | |
| | Compatible with UL508 Comb busbar | | |
| | Terminal screws, 18lb-in (2N-m) | | |
| Applicative Fuses | 10x38mm<br>Midget fuses (≤30A) | 10x38mm<br>Class CC fuses (≤30A) | 10x38mm<br>PV fuses (≤30A) |
| Remarks | 75/90°C (167/194°F) Wire<br>Cu ONLY | | |