

Connecting the Power of the Sun

Eaton is proud to offer a line of solar disconnects for the Canadian market that provide the best solution for switching PV circuits.

This exciting offering meets disconnect requirements of Section 50-012 CEC Part 1, Solar Photovoltaic Systems.

DC circuits consist of two conductors – a positive and a negative. In most PV systems in North America, one of these conductors must be grounded (like a neutral in an AC system).

The most common application is a negative grounded PV system, with the location of this bond usually found at the inverter (transformer type inverters). Per CEC 14-100 only the current carrying ungrounded conductors shall be switched. Thus, in a negative-grounded PV system, only the positive conductor is switched.

Eaton PV switches are an **'out of the box solution'**, CDH1 design are compliant with Section 50-012 CEC Part 1, CSA/ESA approved, suitable for switching one positive circuit, complete with negative ground conductor and compliant PV warning labels.

Negative grounded switches are 600VDC single pole, single circuit. Painted steel enclosure Type 3R, 12/3R, 30A to 600Ampere, Type 4X stainless steel 30A-200Ampere, Type 4 painted steel 400A & 600A, all padlockable. Both fusible or non-fusible configurations are available. The fuse clips are located on the centre pole ensuring that both line and load are de-energized when the switch handle is in the off position. The Eaton 600VDC disconnects were designed specifically for 600VDC Solar Photovoltaic applications.

Features:

- CDH1 design CSA/ESA labeled.
- Meets disconnect requirements of Section 50 – 012 CEC Part 1.
- Meets ESA requirements for PV applications.
- Clear polycarbonate dead-front to guard against accidental contact with live parts
- Section 50 – 004 CEC compliant, highly visible line and load warning label on door of switch specific to PV, also separate, PV System Disconnect labels included.
- Isolated negative ground terminal included as standard, necessary for grounded PV systems per Section 50 CEC part 1.
- Visibly marked positive line and load connections.
- **'Out of the box solution'** - no additional jumpers required.
- Equipment ground lug included.
- Fusible and non-fusible configurations – Class R fuse clips provided as standard.
- Enhanced safety - fuse is completely de-energized on both line and load side when switch is in off position.
- Metallic enclosure ratings Type 3R, 12 and 4/4X stainless steel.
- DH1 design UL listed, compliant to NEC Article 690, meets UL1741 requirements

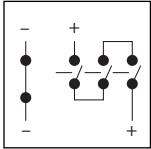


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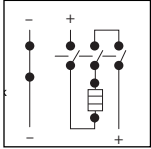
Wiring Diagram



Non-Fusible 600VDC Disconnect for Negative Grounded PV Systems

Amperes	Catalogue Number Type 3R	Catalogue Number Type 12/3R ^③	Catalogue Number Type 4/4X (1) ^①	Lug Capacity Main & Isolated Negative Ground ^②	Equipment Ground Lug	Section 50 CEC Rated Short Circuit Current (ISC) ^③
30	CDH161URKN	CDH161UDKN	CDH161UWKN ^①	#2 - #14 Cu/Al	#4 - #14 Cu/Al	24A
60	CDH162URKN	CDH162UDKN	CDH162UWKN ^①	#2 - #14 Cu/Al	#4 - #14 Cu/Al	48A
100	CDH163URKN	CDH163UDKN	CDH163UWKN ^①	1/0 - #14 Cu/Al	#4 - #14 Cu/Al	80A
200	CDH164URKN	CDH164UDKN	CDH164UWKN ^①	250kcmil - #6 Cu/Al	#2 - #14 Cu/Al	160A
400	CDH165URKN	CDH165UDKN	CDH165UWKN ^①	(1)750kcmil - 1/0 or (2) 300kcmil - 1/0 Cu/Al	250kcmil - #6 Cu/Al	320A
600	CDH166URKN	CDH166UDKN	CDH166UWKN ^①	(1) 750kcmil - 1/0 and (1) 600kcmil - #2 Cu/Al	250kcmil - #6 Cu/Al	480A

Wiring Diagram



Fusible 600VDC Disconnect for Negative Grounded PV Systems

Amperes	Catalogue Number Type 3R	Catalogue Number Type 12/3R ^③	Catalogue Number Type 4/4X (1) ^①	Lug Capacity Main & Isolated Negative Ground ^②	Equipment Ground Lug	Section 50 CEC Rated Short Circuit Current (ISC) ^③
30	CDH161NRK	CDH161NDK	CDH161NWK ^①	#2 - #14 Cu/Al	#4 - #14 Cu/Al	19.2A
60	CDH162NRK	CDH162NDK	CDH162NWK ^①	#2 - #14 Cu/Al	#4 - #14 Cu/Al	38.4A
100	CDH163NRK	CDH163NDK	CDH163NWK ^①	1/0 - #14 Cu/Al	#4 - #14 Cu/Al	64A
200	CDH164NRK	CDH164NDK	CDH164NWK ^①	250kcmil - #6 Cu/Al	#2 - #14 Cu/Al	128A
400	CDH165NRK	CDH165NDK	CDH165NWK ^①	(1)750kcmil - 1/0 or (2) 300kcmil - 1/0 Cu/Al	250kcmil - #6 Cu/Al	256A
600	CDH166NRK	CDH166NDK	CDH166NWK ^①	(1) 750kcmil - 1/0 and (1) 600kcmil - #2 Cu/Al	250kcmil - #6 Cu/Al	384A

① Enclosure Type 4X stainless steel 30A to 200A, Type 4 painted steel enclosure 400A and 600A.

② Field-wiring conductor size shall be determined by referring to CEC Table 2 and Table 4, or NFPA Table 310.16, 75°C column for wire size (AWG). Use wire rated for 90°C (194 °F) or higher.

③ Per Section 50 CEC Part 1 the ISC is calculated by applying 25% derating factor. Thus a 30A non-fusible disconnect has an ISC rating of 24A. Derating is due to the fact that PV output circuits can deliver output currents higher than the rated short circuit for more than 3 hours near solar noon. Fusible disconnects have two 25% derating factors, one 25% continuous duty derating factor per Section 8-104(5) CEC Part 1 and one solar noon derating factor per Section 50 CEC Part 1.

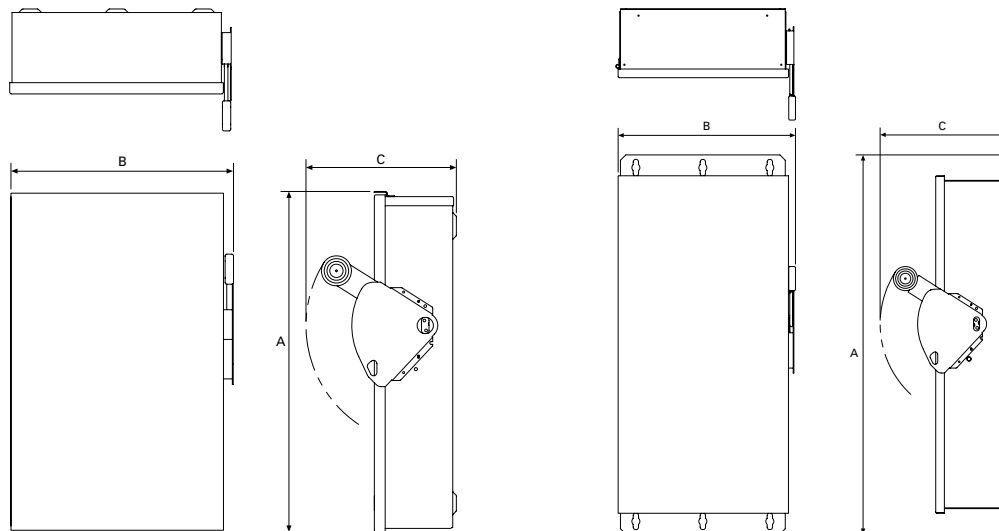
④ Type 12 enclosures can be field converted to 3R when drain screw removed from end wall of enclosure.

Note: For Canadian CSA application order "CDH1" switches, for US - UL application order "DH1" switches. (drop C from prefix of catalogue numbers for UL disconnect)

Type 3R Dimensions Inches (mm)

Amps	A	B	C	A	B	C
30 Non-Fusible	16.35 (415)	8.87 (225)	9.89 (251)	14.14 (359)	8.76 (223)	10.22 (260)
30 Fusible	16.35 (415)	8.87 (225)	9.89 (251)	19.8 (485)	8.76 (223)	10.22 (260)
60 Non-Fusible	16.35 (415)	8.87 (225)	9.89 (251)	14.14 (359)	8.76 (223)	10.22 (260)
60 Fusible	16.35 (415)	8.87 (225)	9.89 (251)	19.8 (485)	8.76 (223)	10.22 (260)
100	22.15 (563)	11.84 (301)	9.89 (251)	24.95 (634)	11.79 (299)	10.22 (260)
200	28.27 (718)	16.66 (423)	11.26 (286)	35.38 (899)	16.5 (431)	11.63 (295)
400	45 (1143)	24.12 (613)	12.39 (315)	57.47 (1460)	24.12 (613)	12.43 (316)
600	52.5 (1334)	25.12 (638)	14.07 (357)	63 (1600)	36.34 (923)	14.25 (362)

Type 12/3R and 4/4X Dimensions Inches (mm)



Note: Safety switch dimensions apply to disconnects for either negative grounded or ungrounded PV systems.

Ungrounded 600VDC floating systems[®]

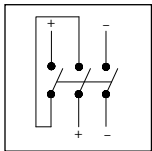
Eaton is delighted to offer disconnects for both grounded and ungrounded 600VDC system. As transformerless inverters make their way into the market, ungrounded DC floating systems for 600VDC PV application will become more popular. Knowing which system you have will help determine the disconnect conductor scheme required. The configuration of the disconnect in a ungrounded 600VDC floating system is very different than a grounded PV system. In a negative grounded 600VDC system only the positive can be switched. In an ungrounded floating DC system both positive and negative are switched in the disconnect. The Eaton 600VDC disconnects for ungrounded 600VDC systems meet Section 14-100 CEC Part1 - overcurrent protection of conductors.

Features include:

- Fusible and Non fusible 30 - 600A 600VDC
- Compliant with Section 14-100 CEC Part 1 and CSA certified for use in ungrounded floating DC systems
- Section 50-004 CEC Part 1 compliant
- Highly visible line and load warning labels on front door
- ISC rating label, standard
- Factory wired in series for 600VDC
- **Out of the box solution**, no additional jumper bars or wiring in series required in the field
- Heavy Duty metallic enclosures type 1, 3R, 12/3R, 4/4X, padlockable
- Load break rated



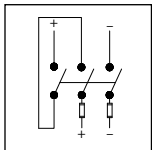
Wiring Diagram



Non Fusible 600VDC Disconnect for UNGROUNDED DC floating systems[®]

Ampere	Catalogue Number Type 3R	Catalogue Number Type 12/3R ^②	Catalogue Number Type 4/4X ^③	Lug Capacity Main ^④	Equipment Ground Lug	Section 50 CEC Rated Short Circuit Current (ISC) ^⑤
30	3HD261NFUDC	12HD261NFUDC	4HD261NFUDC ^⑥	#2 - #14 Cu/Al	#4 - #14 Cu/Al	24A
60	3HD262NFUDC	12HD262NFUDC	4HD262NFUDC ^⑥	#2 - #14 Cu/Al	#4 - #14 Cu/Al	48A
100	3HD263NFUDC	12HD263NFUDC	4HD263NFUDC ^⑥	1/0 - #14 Cu/Al	#4 - #14 Cu/Al	80A
200	3HD264NFUDC	12HD264NFUDC	4HD264NFUDC ^⑥	250kcmil - #6 Cu/Al	#2 - #14 Cu/Al	160A
400	3HD265NFUDC	12HD265NFUDC	4HD265NFUDC ^{⑥⑦}	(1)750kcmil - 1/0 or (1) 300kcmil - 1/0 Cu/Al	250kcmil - #6 Cu/Al	320A
600	3HD266NFUDC	12HD266NFUDC	4HD266NFUDC ^{⑥⑦}	(1) 750kcmil - 1/0 and (1) 600kcmil - #2	250kcmil - #6 Cu/Al	480A

Wiring Diagram



Fusible 600VDC Disconnect for UNGROUNDED DC floating systems[®]

Ampere	Catalogue Number Type 3R	Catalogue Number Type 12/3R ^②	Catalogue Number Type 4/4X ^③	Lug Capacity Main ^④	Equipment Ground Lug	Section 50 CEC Rated Short Circuit Current (ISC) ^⑤
30	3HD261UDC	12HD261UDC	4HD261UDC	#2 - #14 Cu/Al	#4 - #14 Cu/Al	19.2A
60	3HD262UDC	12HD262UDC	4HD262UDC	#2 - #14 Cu/Al	#4 - #14 Cu/Al	38.4A
100	3HD263UDC	12HD263UDC	4HD263UDC	1/0 - #14 Cu/Al	#4 - #14 Cu/Al	64A
200	3HD264UDC	12HD264UDC	4HD264UDC	250kcmil - #6 Cu/Al	#2 - #14 Cu/Al	128A
400	3HD265UDC	12HD265UDC	4HD265UDC ^{⑥⑦}	(1)750kcmil - 1/0 or 300kcmil - 1/0 Cu/Al	250kcmil - #6 Cu/Al	256A
600	3HD266UDC	12HD266UDC	4HD266UDC ^{⑥⑦}	(1) 750kcmil - 1/0 and (1) 600kcmil - #2	250kcmil - #6 Cu/Al	384A

① AVAILABLE Q3 2011

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Eaton Corporation is a diversified power management company with 2010 sales of \$13.7 billion. Celebrating its 100th anniversary in 2011, Eaton is a global technology leader in electrical components and systems for power quality, distribution and control; hydraulics components, systems and services for industrial and mobile equipment; aerospace fuel, hydraulics and pneumatic systems for commercial and military use; and truck and automotive drivetrain and powertrain systems for performance, fuel economy and safety. Eaton has approximately 70,000 employees and sells products to customers in more than 150 countries. For more information, visit www.eaton.com.

PowerChain Management solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle. With Eaton's distribution, generation and power quality equipment; full-scale engineering services; and information management systems, the power system is positioned to deliver powerful results: greater reliability, operating cost efficiencies, effective use of capital, enhanced safety, and risk mitigation.



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