

# Data Bulletin

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## Direct Current and Photovoltaic Systems Applying Heavy Duty Safety Switches (Fusible and Non-Fusible) on dc and Photovoltaic Systems Class 3110

Retain for future use.

### General dc and Photovoltaic Systems, UL® Listed, CSA® Certified (Files E2875 and E154282)

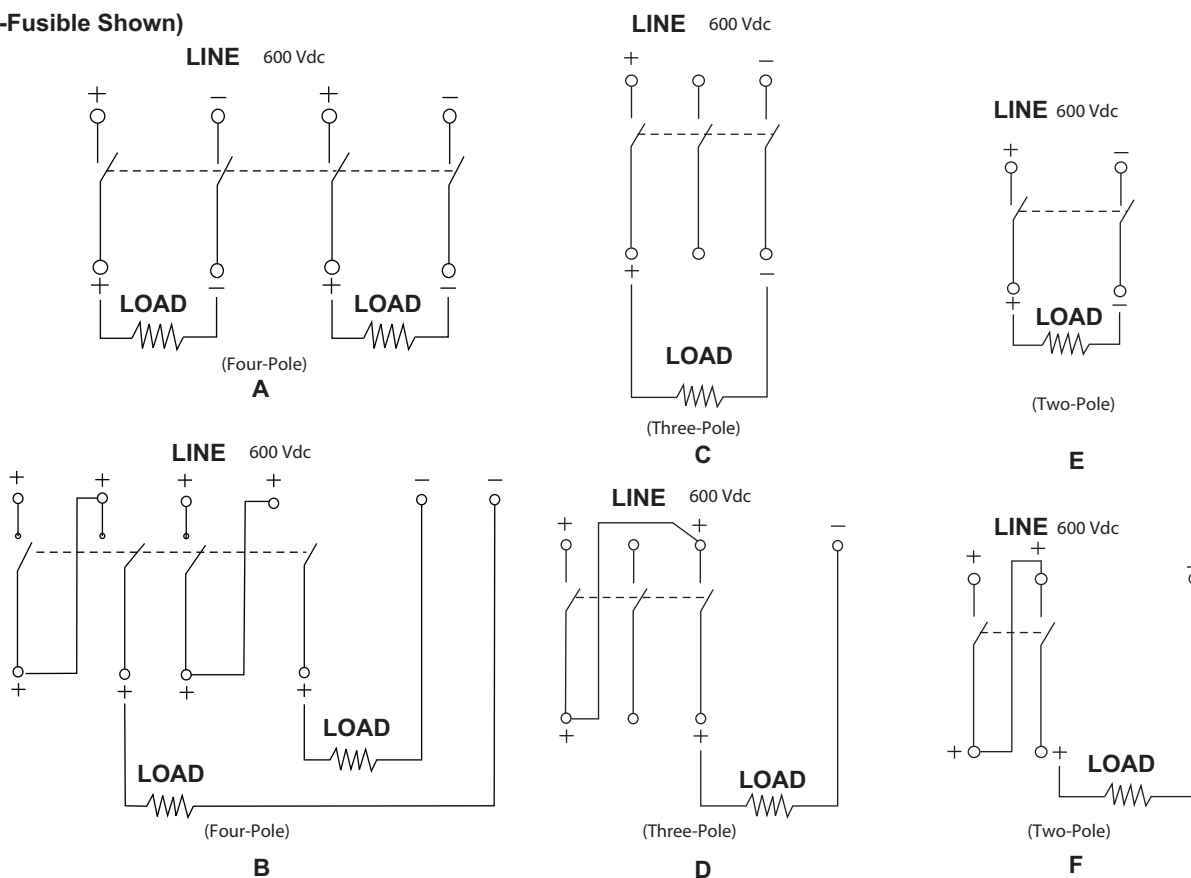
**NOTE:** Heavy duty safety switches may be used on photovoltaic systems with a grounded feed. Refer to Figures 1B, 1D, 1F and 2 (negative grounding shown; positive grounded systems are similarly allowed). For ungrounded systems, see National Electrical Code® (NEC®) 690.35 (NEC 2008, NFPA 70).

All heavy duty safety switches with dc ratings (2-, 3- and 4-pole fusible and non-fusible) are Underwriters Laboratories® (UL®) Listed and CSA® Certified for use on dc applications when wired as shown in Figure 1 (A, B, C, D, E, and F). Additionally:

- Heavy duty safety switches are rated for 600 Vdc maximum open circuit voltage.
- Non-fusible safety switches may carry 100 percent of the nameplate current rating.
- Fusible safety switches may carry 80 percent of nameplate current rating (continuous use).
- Heavy duty switches are dc horsepower rated as indicated on the safety switch wiring diagram.
- Heavy duty switches have a 10,000 ampere dc short-circuit rating at 600 Vdc unless otherwise stated on the switch wiring diagram. Consult factory for short circuit current ratings at 250 Vdc.
- Refer to current Square D® Digest for lug wire range of heavy duty switches.

Figure 1: General dc and Photovoltaic Systems, Fusible and Non-Fusible Wiring Diagram

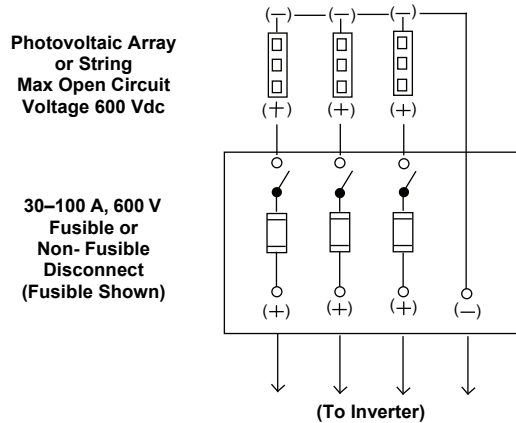
(Non-Fusible Shown)



**Alternate Photovoltaic System  
Wiring, Evaluated and  
Self-Certified by Schneider Electric**

**Not UL Listed**

**Figure 2: Grounded Feed per NEC Article 690**



- Connect negative photovoltaic line (-) to case inside inverter for negative grounded system.
- Positive grounded systems are similarly allowed.
- For ungrounded systems, see NEC 690.35 (NEC2008, NFPA70).

**Current Ratings**

Switch Nameplate 600 V	Switch dc Rating per Pole <sup>1</sup>	Photovoltaic Maximum Circuit Current <sup>2</sup>	Photovoltaic Short-Circuit Current (I <sub>sc</sub> )
30 A	20 A	16 A dc per pole	12.8 A (20/1.56)
60 A	60 A	48 A dc per pole	38 A (60/1.56)
100 A	100 A	80 A dc per pole	64 A (100/1.56)

<sup>1</sup> The switch per pole rating must be at least the photovoltaic maximum circuit current multiplied by 125%.

<sup>2</sup> From NEC 2008 and NFPA 70, Article 690.8: the photovoltaic maximum circuit current is I<sub>sc</sub> multiplied by 125%.

- If a non-fusible disconnect is used, the inverter must not be capable of backfeeding currents into a short circuit or fault in the photovoltaic array or string.
- One inverter may be connected to each pole of the switch.
- Refer to current Square D Digest for lug wire range of heavy duty switches.

**Schneider Electric**  
1601 Mercer Road  
Lexington, KY 40511 USA  
1-888-SquareD (1-888-778-2733)  
www.schneider-electric.us

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