

Data Bulletin

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

Retain for future use.

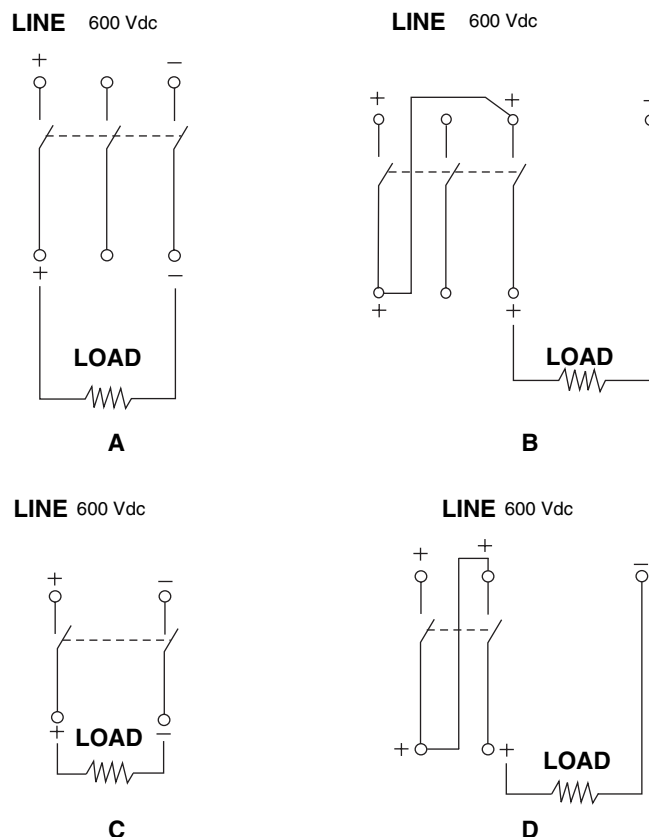
GENERAL DC SYSTEMS (for Photovoltaic, see next page)

All heavy duty safety switches with DC ratings (2- and 3-pole fusible and non-fusible) are Underwriters Laboratories® (UL®) Listed for use on DC applications when wired as shown in Figure 1 (A, B, C and D). 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 amperage dc short-circuit rating unless otherwise stated on the switch wiring diagram.

**Figure 1: General DC Systems
 Fusible and Non-Fusible Wiring Diagram
 (for Photovoltaic, see next page)**

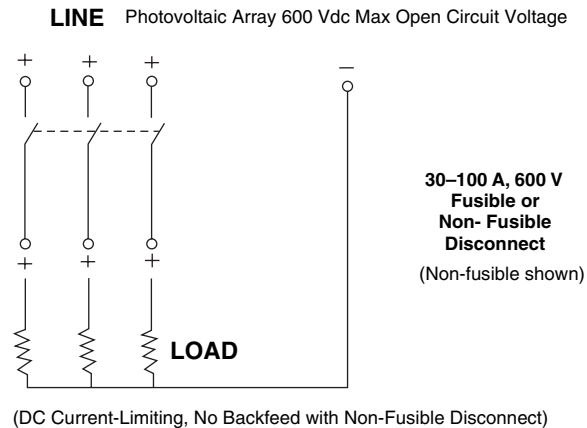
(Non-Fusible Shown)



PHOTOVOLTAIC SYSTEMS

NOTE: Heavy duty safety switches may be used on photovoltaic systems with a grounded feed. Refer to Figures 1B, 1D and 2.

Figure 2: Grounded Feed per NEC Article 690



NOTE: Negative grounding shown in Figure above; positive grounded systems are similarly allowed.

Table 1: Limitations

Switch Nameplate Amperage 600 V	Maximum Current for the PV Array or Photovoltaic String	Rated Short-Circuit Current per Pole for the PV Array
30 A	18 A DC per pole	11.5 A (18/1.56)
60 A	60 A DC per pole	38 A (60/1.56)
100 A	100 A DC per pole	64 A (100/1.56)

- 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 Table 2 (below) for the lug wire range of heavy duty switches.

Table 2: Heavy Duty Safety Switch Wire Range

Ampere Rating	Conductors per Phase and Neutral	Wire Range of Safety Switch per Phase and Neutral AWG/kcmil *	Wire Range of Lug AWG/kcmil *
30 A	1	#12-6 (Al) or #14-6 (Cu)	#12-2 (Al) or #14-2 (Cu)
	2	#14-10 Cu solid or stranded	#14-10 Cu solid or stranded
60 A	1	#12-3 (Al) or #14-3 (Cu)	#12-2 (Al) or #14-2 (Cu)
100 A	1	#12-1/0 (Al) or #14-1/0 (Cu)	#12-1/0 (Al) or #14-1/0 (Cu)

* 30-100 Amp switches suitable for 60°C or 75°C conductors.

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