



NEC Code Compliance for AC Disconnects for EG4 Inverters and ESS Systems

**Clarification for Installers and AHJs
May 23th, 2024**

The following document clarifies the needed AC Disconnects for EG4 Inverters and ESS systems. It specifically details the PowerPro Energy Storage Systems (ESS) certifications and features as they relate to the 2023 NEC codes requirements for system disconnects including the ESS Disconnect requirements under NEC 706.15.

The EG4 PowerPro ESS systems shown in Table 1 are ETL listed to UL 9540 and consist of EG4 18kPV Inverters integrated with EG4 Batteries of 3 types resulting in several configurations of approved ESS systems.

These ESS inverter/battery combinations have an integrated inverter and battery control system. The batteries in the EG4 PowerPro series are not “separate from the ESS Electronics and field serviceable”, as referred to in NEC 706.15(E) - Disconnecting Means for Batteries.

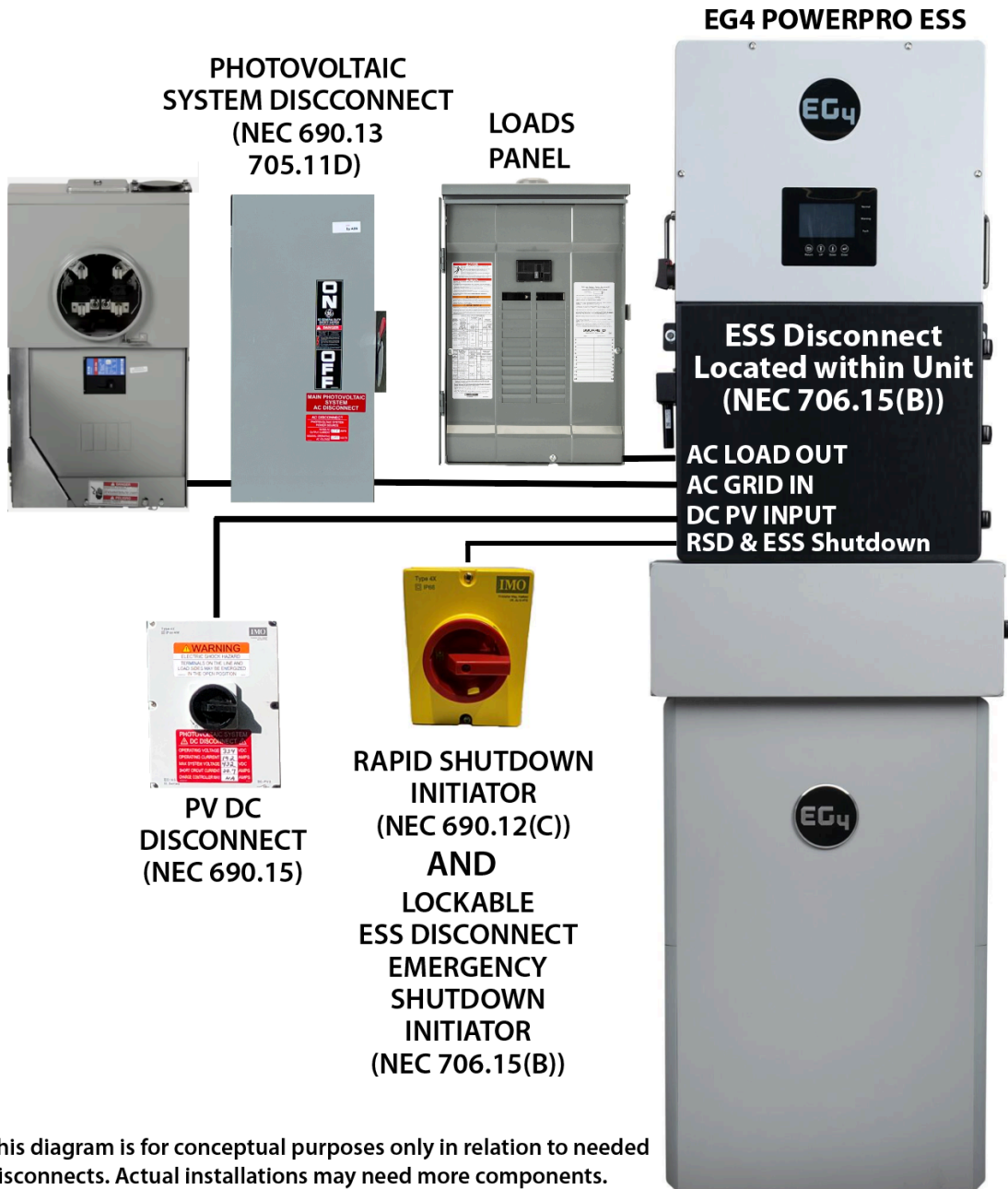
This control system meets the NEC code requirements for the Emergency Shutdown Function required under NEC 706.15(A and B) and the Disconnecting Means for the batteries through direct shutdown of each battery through its BMS (Battery Management System). Direct and rapid shutdown of each and every battery through its onboard BMS is much safer for First Responders and results in no voltage on any conductors outside of the battery upon initiation of the Emergency Shutdown Function as required in NEC 706.15(B).

Installers should not install externally mounted DC Disconnects between the battery and inverter. This would result not only in a violation of the UL 9540 compliance of the ESS system, but could result in the conductors between the batteries and disconnects still being energized after shutdown - exposing First Responders to dangerous DC voltages. **Installers must install an emergency stop initiator that will ensure rapid shutdown of the entire ESS system including all conductors in the system. Installers need to also install a Photovoltaic System Disconnect for the entire system as required in NEC 690.13 and NEC 705.11(D).**

The following diagram shows the NEC required disconnects for an EG4 ESS system.



AC Disconnects Required by 2023 NEC Code and most local utilities for EG4 PowerPro ESS Systems





		EG4 18kPV Inverter	
EG4 BATTERY MODEL	# of Batteries	# of Inverters	ESS ETL Conforms to UL 9540* Certificate Date
EG4-LL-48V 100AH, LiFePO4	3-12	1-3 Inverters	Oct 27th, 2023
EG4 LifePower4 48V 100AH, LiFePO4	3-12	1-2 Inverters	Oct 17th, 2023
EG4 16/280-AW-LL (WallMount AllWeather 48V 280Ah) LiFePO4	1-3	1-2 Inverters	Oct 19th, 2023

Table 1: ESS models with ETL Conforming to UL 9540

Certificates are available upon request.

Reference: [2023 NEC Updates for Energy Storage Systems](#)

DISCLAIMER

EG4 reserves the right to make changes to the material herein at any time without notice.