

Bulletin 64-7-0
Installation and approval of Energy Storage Systems
Rules 2-024, 64-900, 64-902, 64-904, 64-906, 64-908, 84-002 and 84-022

Issued October 2019

Scope

- (1) Introduction
- (2) Approval of Energy Storage Systems (ESS)
- (3) Application of Section 64 rules to ESS

(1) Introduction

Energy Storage Systems (ESS) are defined in Section 64 of the Ontario Electrical Safety Code (OESC) as equipment or systems that receive electrical energy and store that energy in some form for later use to supply electrical energy when needed.

An ESS can be self-contained, or comprised of individual devices assembled together to form a system. ESS can be complex in nature, comes in different configurations and include various types of electrical equipment.

Photo B1 – Example of a large ESS comprised of different electrical equipment



(2) Approval of Energy Storage Systems (ESS)

Question 1

What are the approval requirements for ESS?

Answer 1

All Energy Storage Systems (ESS) (self-contained and others) for use or sale in Ontario shall be approved as per OESC Rule 2-024 and Ontario Regulation 438/07.

Approval may be obtained by one of the following:

1. **Product certification** by an accredited certification body to the requirements of ANSI/CAN/UL 9540-16 Energy Storage System.
2. **Field Evaluation** by an accredited inspection body to the requirements of the SPE-1000 model code and applicable requirements of the ANSI/CAN/UL 9540-16 Energy Storage System. When separate equipment is combined to form an ESS, these are to be considered as complex installations and interconnected wiring attached to the building structure needs to be installed as per the OESC and the complex installation marking requirement as per the Field Evaluation guideline would apply.
3. **Acceptance by an inspector** during wiring inspection when **all of the following conditions are met:**
 - (a) (i) The system is utilizing lead acid type batteries; or
(ii) for other than lead acid batteries, the system is rated less than 1kWH;
 - (b) All separate equipment incorporated to form the ESS system are individually approved;
 - (c) All separate equipment incorporated to form the ESS are installed as per their corresponding manufacturer's instructions;
 - (d) Wiring as per the OESC; and
 - (e) Batteries are certified to the applicable standard, except for lead acid type.

(3) Application of Section 64 rules to ESS

Rule 64-900 requires all the general rules of Section 64 to apply for energy storage system installations, such as overcurrent protection, disconnecting means, wiring methods, grounding and bonding, etc.

Diagrams B1 and B2 below show examples of electrical systems that include energy storage systems, and fed directly from Supply Authority.

Interconnection of energy storage systems, whether self-contained or other, shall be in accordance with supply authority requirements as per Rule 84-002. Additionally, a connection authorization is required as per ESA processes. For more information, refer to Bulletin 84-1-*, Interconnection of electric power production sources

Diagram B1 – Example of an electrical system with self-contained ESS

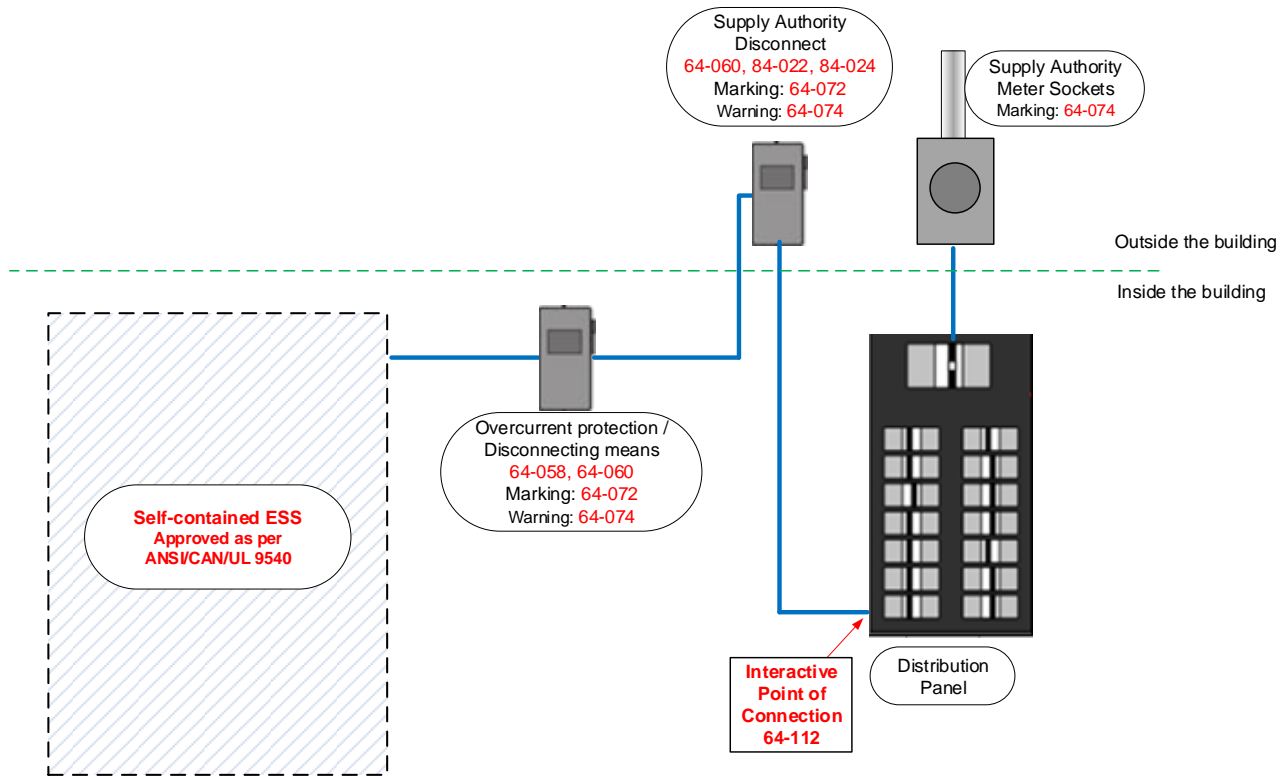
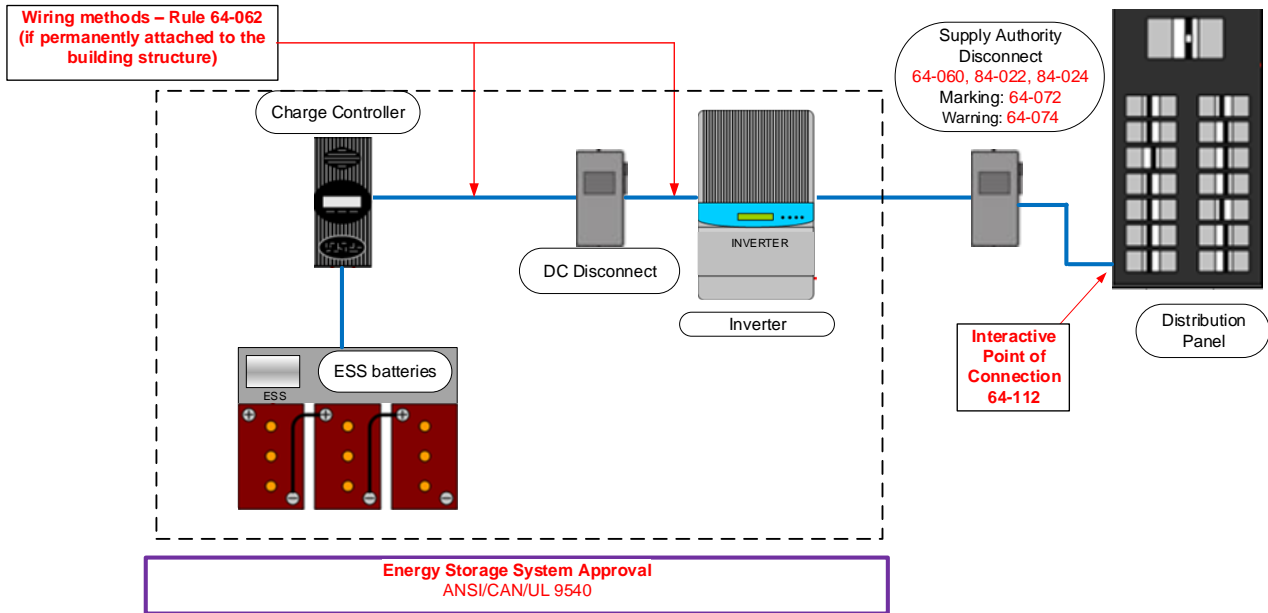


Diagram B2 – Example of a large ESS



Note:
For other than self-contained ESS, the approval of an assembled ESS shall include all equipment forming the system. As a minimum, an energy storage system will include a charge controller and storage batteries