

Bulletin 64-7-2
Installation and Approval of Energy Storage Systems
Rules 2-024, 64-900, 84-002 and 84-022

Issued October 2023
Supersedes Bulletin 64-7-1

Scope

- 1) Introduction
- 2) Approval of Energy Storage Systems (ESS)
 - a) Marking requirements for multi-part ESS
- 3) Examples of ESS

1) Introduction

Energy Storage Systems (ESS) are defined in Section 64 of the Ontario Electrical Safety Code (OESC) as a system capable of supplying electrical energy to local power loads or operating in parallel with a supply authority system or any other power sources. ESS can include but are not limited to electrochemical (battery/capacitor), chemical (fuel cell), mechanical (flywheel/compressed air/pumped water) or thermal (heated fluids).

2) Approval of Energy Storage Systems (ESS)

Question 1

What are the approval requirements for ESS?

Answer 1

All ESS for use or sale in Ontario shall be approved in accordance with 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 Energy Storage Systems and Equipment. (See Diagram 1)
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 Energy Storage Systems and Equipment. When separate equipment is combined to form an ESS (see Diagram B2), these are to be considered as complex installations. Guidelines for Field Evaluation Agencies ESA-SPEC-008 would apply for marking of complex installations and interconnecting wiring between parts of ESS.
3. **For battery energy storage systems (BESS) acceptance by an inspector** during wiring inspection when all of the following conditions are met:
 - a) The system is utilizing
 - i) Lead acid type batteries; or

- ii) For other than lead acid batteries, the system is rated less than 1 kWh;
- 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.

a) Marking requirements for multi-part ESS

The ESS can be constructed either as one complete piece of equipment or as matched assemblies, that when connected, in accordance with the manufacturer's installation instructions, form the ESS. See examples in topic 3). If the ESS includes multiple parts that are housed in separate enclosures, it shall be considered as a multi-part ESS as per the standard ANSI/CAN/UL 9540.

As per the standard, for multi-part ESS, a main label should identify that the system has been evaluated as a multi-part ESS. A main label should identify all the pieces of the ESS (could be the model number and quantity of the components that make up the ESS). A main label shall be provided on at least one of the parts (can be on the main part of the ESS that is the point of connection for the ESS). Each separate part of the multi-part ESS shall have a nameplate marking as required by the equipment safety standard to which it was evaluated. Therefore, the main part shall have more than one label on it; one for the part and another that describes the multi-part ESS that is installed.

This marking requirements applies to all multi-part ESS, either being certified or field evaluated.

3) Examples of ESS

Photo B1 – Example of an ESS



Diagram B1 – Self Contained (Single Unit) BESS (example)

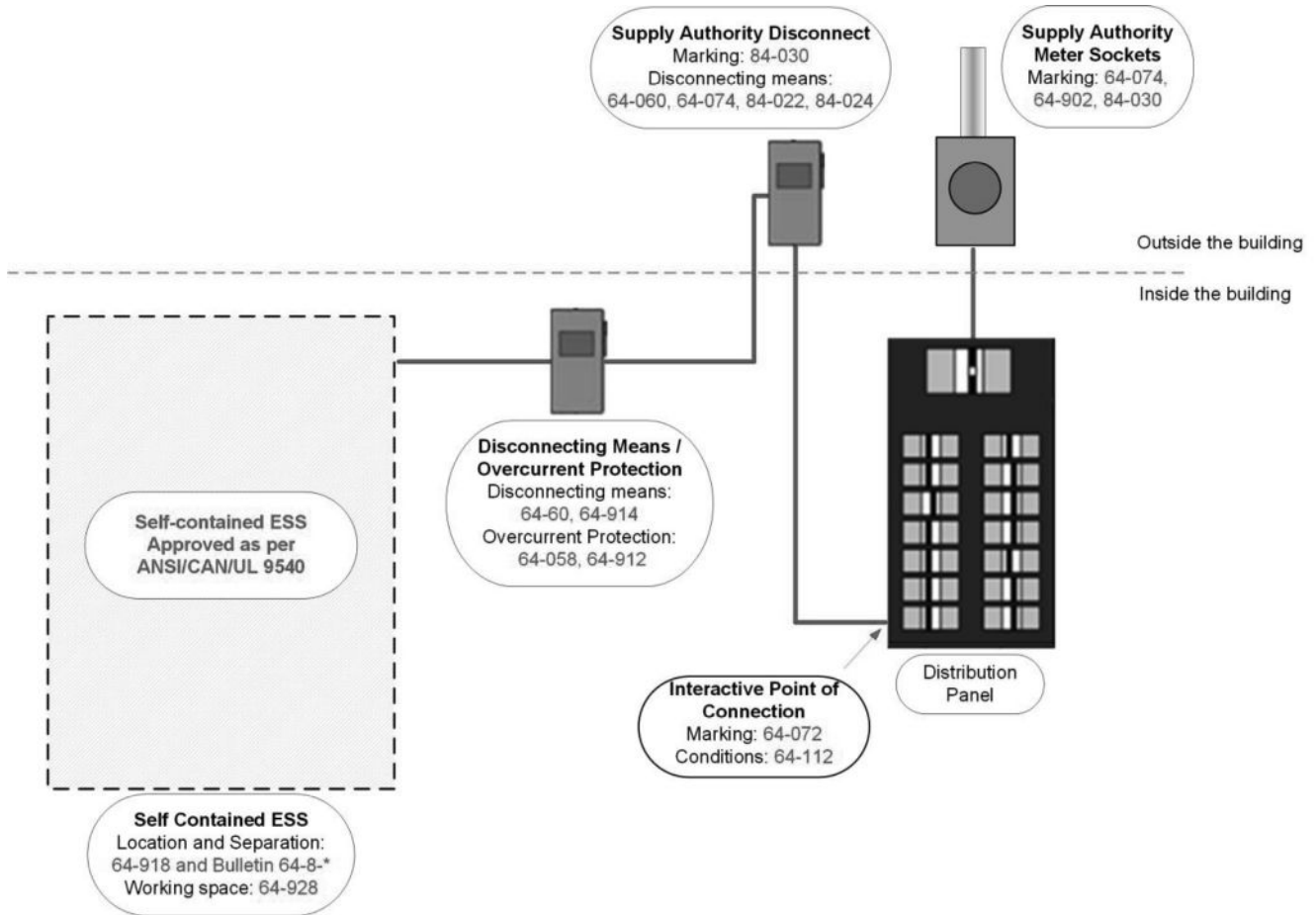
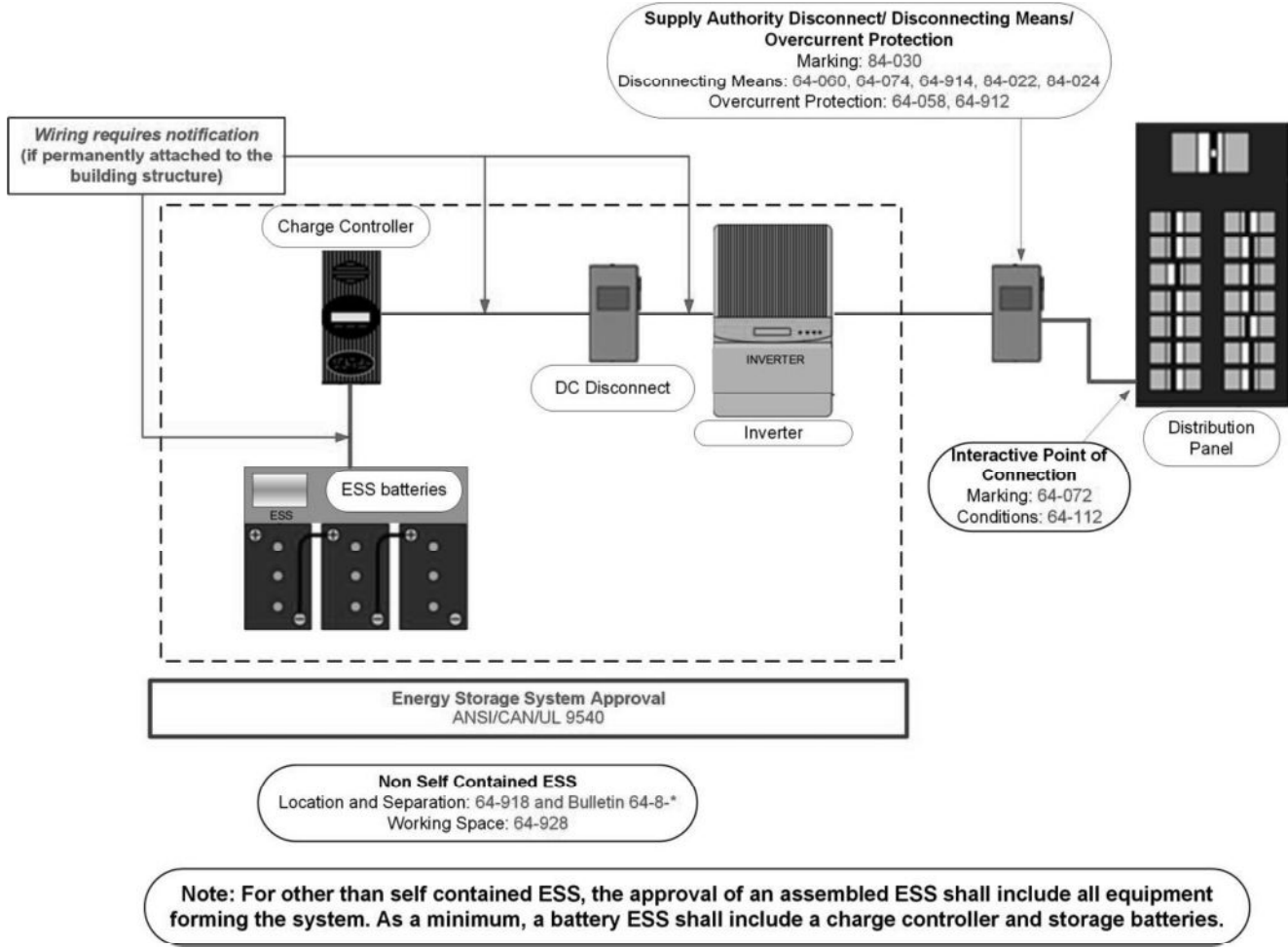


Diagram B2 – Non self contained (Composed of Multiple Parts) BESS (example)



Note:

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