

IQ Battery 5P minimum room size specifications based on UL 9540A testing

Applicable regions: United States and its territories, Mexico, and Canada

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Introduction

IQ Battery 5P has a new battery module design to reduce thermal runaway between battery cells. The new design was evaluated for UL 9540A edition 4. This test was performed using the UL 9540A standard as written without using UL Certification Requirements Decisions (CRDs). The testing was done in an NFPA 286 fire test room, where gas composition was measured by Fourier transform infrared (FTIR) gas analyzers as defined in the standard.

The results of the test allow the IQ Battery 5P unit with part number mentioned in [Table 1: Part number identifier](#) to be installed in non-habitable indoor or outdoor locations with a minimum room size (MRS) greater than 3 m^3 based on 25% lower flammability limit (LFL) calculations.

Unit test configuration

The minimum spacing between the wall-mounted units was 3 inches horizontal and 6 inches vertical. The floor-mounted units were mounted on the floor at 8 inches from the wall-mounted units. The following figure illustrates the layout of the test.

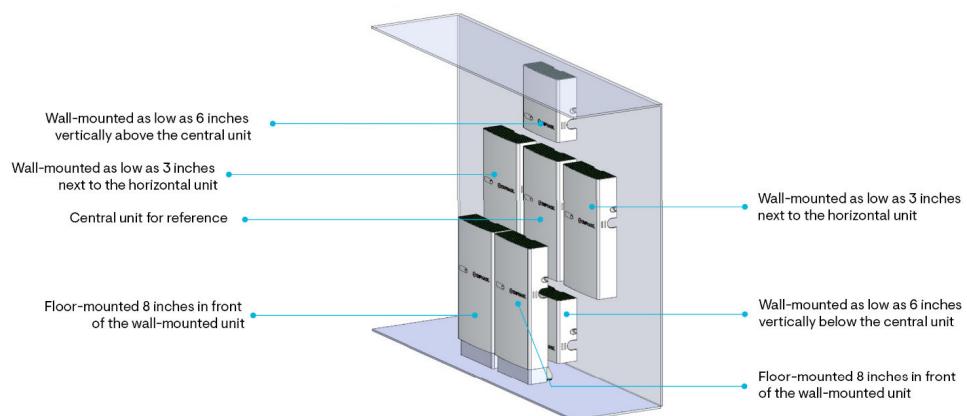


Figure 1: Reduced spacing layout for UL 9540A testing



NOTE: Some battery units are not drawn to scale. These smaller battery units also represent an IQ Battery 5P unit.

The following figure illustrates the vertical and horizontal separation of the test configuration.

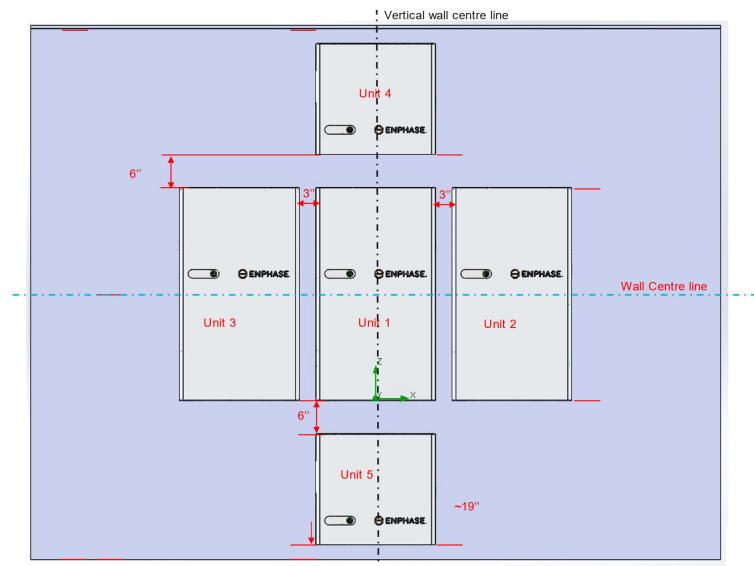


Figure 2: Vertical and horizontal separation of the test configuration

 **NOTE:** Some battery units are not drawn to scale. These smaller battery units also represent an IQ Battery 5P unit.

The following figure illustrates the top view of the test configuration.

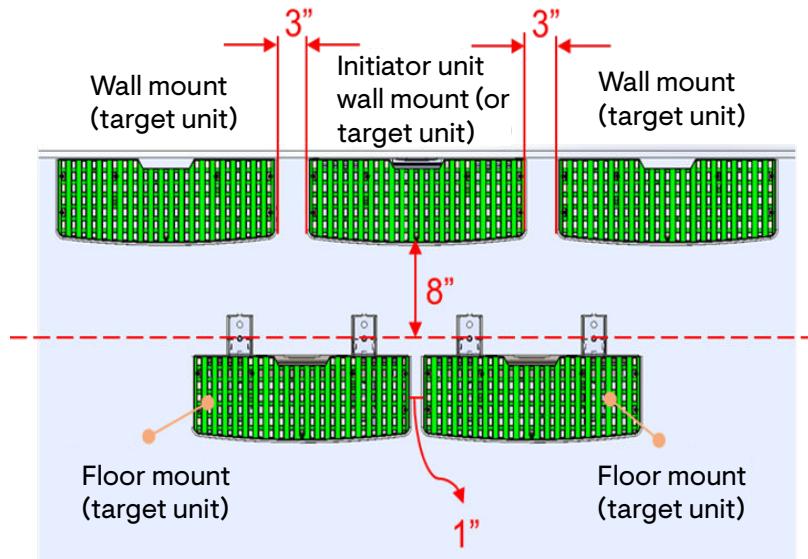


Figure 3: Top view of the test configuration

Ordering the new IQ Battery 5P

Some AHJs may require IQ Battery 5P to be tested to the UL 9540A standard without CRDs to allow installation in non-habitable indoor or outdoor locations with reduced spacing. If you are in such a

jurisdiction, you can work with your sales account manager to request IQ Battery 5P units with the specific part numbers to be shipped.

Enphase sales operations will ensure batteries shipped to these locations have labels clarifying the smaller, allowable minimum room size (MRS). The details of Ordering SKUs and unit part numbers of the respective batteries are mentioned in the following table. The new battery has a redesigned battery module, that is, a cell pack.

Table 1: Part number identifier

| Enphase ordering SKU | Enphase UL 9540 and UL 9540A Tested SKU | Enphase unit part number ¹ | UL 9540A project number | Module model and part number | Cell part number | Allowed minimum room size |
|-------------------------------------|---|--|-------------------------|--------------------------------|------------------|---------------------------|
| IQBATTERY-5P-1P-NA | IQBATTERY-5P-1P-NA | 892-00024 93 or higher, 894-00024 01 or higher, 892-00045 01 or higher | 4790992384, 9/14/23 | EHE-002 Rev 02 436-00007-02 | GOC24A | 3 m ³ |
| IQBATTERY-5P-1P-NA | IQBATTERY-5P-1P-NA | 892-00024 92 and lower | 4790527540, 02/02/23 | EHE-002 436-00007-01 | GOC24A | 133 m ³ |
| IQBATTERY-5P-1P-NA | IQBATTERY-5P-1P-NA | 892-00033 01 or higher, 894-00033 01 or higher, 892-00046 01 or higher | 4790957973, 10/05/23 | ZE21156-01 436-00009-02 | D4C3355-6 5AH | 3 m ³ |
| IQBATTERY-5P-1P-NA-DOM ² | IQBATTERY-5P-1P-NA | 894-00124 01 or higher | 4790992384, 9/14/23 | EHE-002 Rev 02 436-00007-02 | GOC24A | 3 m ³ |
| IQBATTERY-5P-1P-NA-DOM ² | IQBATTERY-5P-1P-NA | 894-00133 01 or higher | 4790957973, 10/05/23 | ZE21156-01 436-00009-02 | D4C3355-6 5AH | 3 m ³ |

¹A unique identifier issued by Enphase to distinguish between units.

²DOM means domestic USA manufacturing location

Identifying IQ Battery 5P units based on the unit part number

Identification marks are available on the package and the battery unit. The labels on the packaging box are shown in the following figure. The yellow label states a minimum room size (MRS) greater than 3 m³ based on a 25% lower flammability limit (LFL) according to UL 9540A testing. The yellow label also includes the Enphase unit part number, for example, 892-00024 93.



Figure 4: Packaging label showing Enphase unit part number and minimum room size

The same label is also applied to the unit, as shown in the following figure.

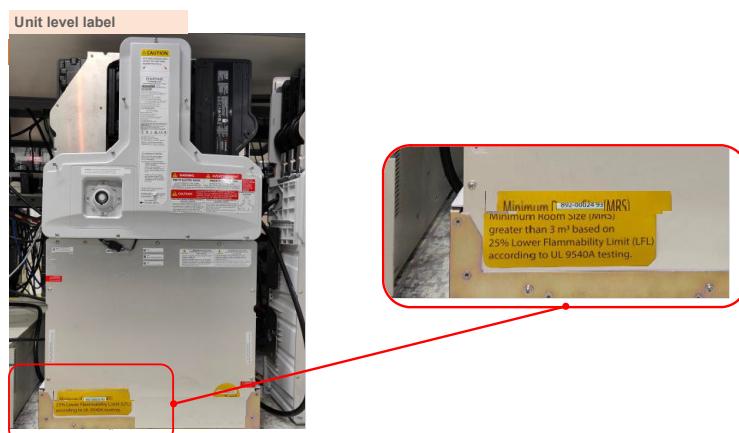


Figure 5: Unit label showing Enphase unit part number and minimum room size

Appendix A

UL 9540A report summary for units with new battery module

Unit part number: 892-00024 93 or higher, 894-00024 01 or higher, 892-00045 01 or higher, 894-00124 01 or higher

Module model number: EHE-002 Rev 02

Module part number: 436-00007-02

Report title: UNIT TEST REPORT UL 9540A Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems (AACD).

Project number: 4790992384

Test date: 09/14/2023

Minimum room size (MRS): 3 m³

For more information, see the [UL 9540A report summary of IQ Battery 5P \(892-00024 93 and higher\) tech brief.](#)

Appendix B

UL 9540A report summary for units with old battery module

Unit part number: 892-00024 92 and lower

Module model number: EHE-002

Module part number: 436-00007-01

Report title: UNIT TEST REPORT UL 9540A Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems (AACD).

Project number: 4790527540

Test date: 09/01/2022

Minimum room size (MRS): 133 m³

For more information, see the [UL 9540A report summary of IQ Battery 5P \(892-00024 92 and lower\) tech brief](#).

Revision history

| Revision | Date | Description |
|---------------|-------------|--------------------|
| TEB-00153-2.0 | August 2024 | Editorial updates. |
| TEB-00153-1.0 | March 2024 | Initial release. |