PCS Certificate of Compliance

April 14, 2025

Project #Y0623
Report #LIT14250623

Sangam Baligar
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Subject: PCS Export-only testing for the Enphase Battery Energy storage system with IQ Battery 10C

Dear Mr. Baligar

This test report represents the results of our evaluation/testing of the PV + Battery Energy Storage System to the requirements contained in following standards:

UL3141 Issue 2 Outline of Investigation for Power Control Systems (PCS) Dated Oct 9th, 2024
UL1741 3rd Ed CRD for Power Control Systems (PCS), Dated April 8, 2023
UL1741 2nd Ed CRD for Power Control Systems (PCS), Dated March 8, 2019

Compliance includes management, control, and limitation of power exchange between Energy Storage Systems and Area EPS/AC utility systems.

The PCS evaluation was conducted on a representative 4th Generation Enphase Energy System and the certification applies to the following configurations which were part of the tested system in the PCS modes defined below.

PCS Modes[1]	PV Model[2]	ESS Model[2]	Max PV Ratings	Max ESS Ratings	Max PV+ESS Rating	Additional Devices needed for PCS functionality	Measured Average/ Maximum OLRT	Settling Time[3]
ESS Export-only Mode	UL Listed Line-to-Line PV	IQ Battery 10C	80A/ 19.20kVA	118A/ 28.32kVA	198A/ 47.52kVA	IQ Combiner 6C/ CTs /Meter Collar	1s / 1.05s	1.25s

1 Tested with PCS eSW 1.4.0

2 Please see System configuration table further for exact variations of SKU model numbers.

3 Considered only test cases in which ESS is importing power from Grid. Refer below mode definition.

NEM ESS Export Only Mode (charge from PV only):
This is a PCS mode where the Storage system was evaluated for its ability not to import power from the grid for ESS Charging and to only allow the ESS to export power to grid. ESS Import from grid and power consumed by the energy storage were monitored. The test verified that when PV power or system load levels were subjected to step changes and the ESS did not import from the grid.

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The table below describes the System configuration and SKUs associated with tested PCS mode(s)

System Component	Product SKUs	Equipment required in PCS mode?
		Export-only
Enphase PV[1]	IQ8H-240-72-2-US, IQ8-60-2-US, IQ8PLUS-72-2-US, IQ8M-72-2-US, IQ8A-72-2-US, IQ8-60-M-US, IQ8PLUS-72-M-US, IQ8M-72-M-US, IQ8A-72-M-US, IQ8H-240-72-M-US, IQ8MC-72-M-US, IQ8AC-72-M-US, IQ8HC-72-M-US, IQ8X-80-M-US	Optional
Enphase Battery	Enphase IQ Battery 10C (Encharge battery 4th generation): IQBATTERY-10C-1P-NA, IQBATTERY-10CS-1P-NA, B05-C01-US00-1-3-RMA rated at 240Vac	Required
Enphase IQ Combiner 6C	X-IQ-AM1-240-6C	Required
CTs	For consumption monitoring: At least 2 units of CT-200-SPLIT or CT-200-CLAMP or Meter Collar PV and battery monitoring CTs are integrated into the IQ Combiner 6C	Required[2]
Meter Collar	For Monitoring consumption: At least 1 unit of MC-200-011-V01	Required[2]

[1]Enphase Battery Export-only Mode was tested with IQ8. However, this mode works independently of PV SKUs and the Battery can be paired with other PV SKUs
[2]Either Meter Collar (OR) Consumption CTs placed at the Point of Common Coupling (PCC) is required for operation in this mode. Both are not required

This PCS supports:

- Up to 3 circuit inputs, one PV aggregate breaker input and two ESS, each with up to 4 daisy-chained IQ Battery 10C units.
- Each ESS circuits' charge/discharge current with IQ Battery 10C can be limited from 64 Amps to 8 Amps continuous.

1. PV inverter breakers on the combiner box must be properly sized.
    a. The maximum breaker size for each PV inverter branch in the combiner PV Bus is 20A.
    b. The maximum breaker size for PV aggregate breaker circuit in the combiner is 100A.

2. Battery inverter breakers on the combiner box must be properly sized.
    a. The maximum breaker size for a single IQ Battery 10C-based branch in a combiner box is 40A.
    b. The maximum breaker size for each battery branch in the combiner is 80A per circuit.

3. Please refer to the equipment installation instructions for system configuration details.

If there are any questions regarding the results contained in this report, please contact me or any Bureau Veritas CPS customer service representative.

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Sincerely,

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Reviewed by,

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