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RESEARCH REPORT NO.: 930512

Approval Date: March 27, 2015
Expires: March 27, 2016

Power-One, Inc.
3201 E. Harbour Dr.
Phoenix, AZ 85034
Attn: Robert White

GENERAL APPROVAL - PV Micro-inverter - Models MICRO-0.3-I-OUTD-US-208/240 and MICRO-0.25-I-OUTD-US-208/240 - Manufactured by Power-One, Inc. (Aurora) installed as part of the Photovoltaic (PV) system on a single family dwelling (SFD).

CONDITIONS OF APPROVAL

The installation of the above PV Micro-inverters are approved when the following conditions are met:

1. Only the following model designations are approved under this research report:

Model Number	Power	Input DC Voltage	Input DC Current	Output 1Ph, 60HZ, 0.95pf
MICRO-0.3-I-OUTD-US-208/240	300 W	Nominal: 40 VDC Maximum: 65 VDC Full Power: 30-50 VDC	10.5 Amp	208 VAC, 1.44 Amp 240 VAC, 1.25 Amp
MICRO-0.25-I-OUTD-US-208/240	250 W	Nominal: 40 VDC Maximum: 65 VDC Full Power: 30-50 VDC	10.5 Amp	208 VAC, 1.2 Amp 240 VAC, 1.04 Amp

2. The Micro-inverters shall be plainly and permanently marked on a contrasting background where readily visible with the following:
 - a. Manufacturer's Name,
 - b. Model designation,
 - c. Serial Number,
 - d. Complete input and output direct current (DC) and alternating current (AC) in Volt, Amperes/Watts electrical ratings,
 - e. Maximum branch circuit protection: 20A
 - f. Maximum and minimum operating ambient temperatures,
 - g. Current CSA listing information.
3. If the listing of this PV Micro-inverter, under CSA File Number 173688 is no longer, the approval of this Research Report may be suspended or cancelled subject to Electrical Test Lab's evaluation.

4. Upon installation, the following marking shall be permanently printed on a weather proof tag and placed on each end of PV circuit run(s):

“The installation of this PV Micro-inverter shall comply with City of Los Angeles Research Report (RR) number 930512. Not valid if the RR is expired. For a copy of RR visit www.LADBS.org or call 323-224-2168.”

5. Micro-inverters shall be supplied from a dedicated 20 Ampere AC branch circuit without GFCI or AFCI protection
6. The Micro-inverters shall be installed and maintained by “Qualified Person” as defined in the Los Angeles Electrical Code and in strict compliance with manufacturer’s instructions.
7. The maximum number of Micro-inverters in a 20 Amp circuits shall not exceed the following:

Model Number	Power	Voltage Single Phase	Max Number of Micro-inverters	Max Length of Circuits (feet)
MICRO-0.3-I-OUTD-US-208/240	300 W	208 VAC	11	90
MICRO-0.3-I-OUTD-US-208/240	300 W	240 VAC	12	96
MICRO-0.25-I-OUTD-US-208/240	250 W	208 VAC	13	103
MICRO-0.25-I-OUTD-US-208/240	250 W	240 VAC	15	116

Refer to manufacturer’s installation instructions.

8. The Micro-inverter shall be provided with a DC grounding electrode fitting for the DC grounding electrode conductor (GEC).
9. The DC grounding electrode fitting shall be of approved stainless steel 300 series material, consisting of a clamp, No.10 machine screw, self clinching nut screw and ground washer. When assembled, the ground screw shall be torqued to 45 in-lb in accordance with the manufacturer’s installation instructions.
10. Only No. 6 AWG or No. 8 AWG solid bare copper (CU) wire shall be used as the DC GEC under the DC grounding electrode terminal. This bare CU wire shall be installed in accordance with provisions of section 250.64 of the 2011 Los Angeles Electrical Code.
11. All interconnecting cable system associated with this Micro-inverter shall be listed by a Recognized Testing Agency.
12. The hardware used to mount the Micro-inverter to the racking system shall be of a corrosion resistant type.
13. The power source to the engage cable shall be de-energize prior to servicing.

14. The maximum available symmetrical line to ground fault current at the Micro-inverter shall not exceed 5,000 amperes.
15. To limit the maximum ground fault current, the minimum number of Micro-inverters in a circuit shall not be less than 4.
16. For installations in a single family dwelling in the City of Los Angeles, The minimum distance between the service equipment to the first Micro-inverter in a circuit shall comply to the following:

Single Family Dwelling, Size of Service	Available Fault Current At the Service	Size of Circuit Between Service & Micro-inverter	Minimum Distance From Service to Closest Micro-inverter
100A to 225A	10,000 Amp	#12 AWG	10 Feet
100A to 225A	10,000 Amp	#10 AWG	15 Feet
226A to 400A	22,000 Amp	#12 AWG	15 Feet
226A to 400A	22,000 Amp	#10 AWG	20 Feet

17. Only the following UL Listed AC, Engage Cable shall be used with this Micro-inverter:
 - a. Type TC-ER,
 - b. THWN-2,
 - c. 4C,
 - d. 10AWG,
 - e. 90 °C - Dry or Wet,
 - f. 600V,
 - g. SUN RES,
 - h. OIL RES I / OIL RES II.
18. The PV racking system shall be provided with grounding means (ie. ground lug) for termination of the equipment grounding conductor that is independent form the Micro-inverter. The WEEB connector shall not be relied upon as an approved equipment bonding jumper or EGC.
19. The inverter’s mounting screws shall not be used as a bonding jumper or as a part of the equipment grounding path between the Micro-inverter and the PV racking system.
20. The AC cable connector shall be of polarized nonstandard configuration, locking type with a grounding member, where all live parts are guarded against inadvertent contact by a person. The connector shall be rated for interrupting normal current without hazard to the operator. The grounding member shall be the first to make and the last to break contact with the mating connector.
21. The installation of the Micro-inverter shall comply with applicable provisions of the Los Angeles City Electrical Codes (Building, Electrical, and Fire Codes).

22. Except as permitted under this research report, the installed Micro-inverters and the engage cables, when replaced, shall be of the identical original manufacturer's part that was approved by the Los Angeles City Electrical Testing Laboratory.
23. The manufacturer shall supply either hard copies of, or downloadable web links for Installation Instructions, Operation Manual, Quick Install Guide and a copy of this approval letter to the installer.
24. The Micro-inverter shall be installed according to the provisions of this approval and the manufacturer's installation instructions. When the manufacturer installation instructions conflict with this approval letter, the conditions specified in this approval letter shall prevail.
25. The installation of this Micro-inverter is not approved for Hazardous (Classified) locations as defined in 2014 Los Angeles Electrical Code.
26. This Micro-inverter is only evaluated for fire, shock and personal hazard. Its performance or efficiency has not been investigated.
27. If a Micro-inverter is no longer in service, it shall be disconnected and removed in accordance with the manufacturer's installation instructions.
28. An electrical permit shall be obtained prior to installation or relocation of a photovoltaic system in the City of Los Angeles.

DISCUSSION

The products covered under this Research Report are grounded, non-linear, 208 or 240 volts, single phase, utility-interactive, PV Micro-inverters, Models MICRO-0.3-I-OUTD-US-208/240 and MICRO-0.25-I-OUTD-US-208/240, Manufactured by Power-One, Inc. (Aurora) for use with Photovoltaic (PV) modules not exceeding 65 VDC output. This Micro-inverter is intended to connect to a single PV module using individual single pin connectors. The inverter's positive DC line is connected to its metal enclosure through the built in ground fault circuit detection and interrupter and the grounding electrode termination fitting. The AC neutral is not bonded to the DC grounded positive conductor or the inverter metal enclosure. The inverter metal inclosure is connected to the AC ground through the approved cable connector and the equipment grounding conductor within the AC cable.

The PV modules, racking system, and associated hardware are not part of this approval.

The Power-One Micro-inverter consists of a NEMA 4X aluminum corrosion resistant metal enclosure, built-in DC ground fault circuit detector and interrupter, a positive and negative DC cable and connectors, an AC cable and connector, and a stainless steel DC grounding electrode conductor fitting.

When this system is installed in accordance with the provisions of this General Approval, it should meet the minimum safety standards of the Los Angeles City Electrical Code.

For this General Approval to be valid on any installation in the City of Los Angeles, an engineer or inspector of the Department of Building and Safety must make a determination that all conditions of the General Approval required to provide equivalency have been met.

This General Approval is in accordance with Section 93.0303 of the Electrical Code pertaining to "New Materials and Methods of Construction" and does not waive the requirements of the City of Los Angeles Building Code.

This General Approval is neither a product endorsement nor a certification of accuracy or function of the approved item.



Power-One *Micro-inverter*

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