08-August-2024

Unirac
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Tel: 505 242 6411

Attn.: Engineering Department

Subject: Engineering Certification for the Unirac NXT UMOUNT System to Support Photovoltaic Panels.

The Unirac NXT UMOUNT Flush-to-Roof is an extruded aluminum rail system that is engineered to hold most framed solar modules to a roof structure and installed parallel to the roof surface.
We have reviewed the NXT UMOUNT system, a proprietary mounting system for rooftop solar photovoltaic (PV) panels installation, and the U-Builder 2.0 Online tool. This U-Builder 2.0 software includes analysis for the NXT UMOUNT rail and NXT UMOUNT hardware. All information, data and analysis are in compliance with the following codes, city ordinances, and typical specifications:

Codes:

1. 2018 Kentucky Building Code.
2. ASCE/SEI 7-10 Minimum Design Loads for Buildings and other Structures.
3. International Building Code, 2015 Edition w/ Provisions from SEAOC PV-2 2017.
4. International Residential Code, 2015 Edition w/ Provisions from SEAOC PV-2 2017.
5. AC428, Acceptance Criteria for Modular Framing Systems Used to Support Photovoltaic (PV) Panels, November 1, 2012 by ICC-ES.
6. Aluminum Design Manual 2015 & 2020 Edition.

The following are typical specifications to meet the above code requirements:

Design Criteria:
Ground Snow Load = 0 - 100 (psf)
Basic Wind Speed = 85 - 190 (mph)
Roof Mean Height = 0 - 60 (ft)
Roof Pitch = 0°-45°
Exposure Category = B, C & D

Attachment:
Shingle Roof:
L-Foot, Flashkit Pro, FlashLoc DUO, Stronghold Attachment Kit, Stronghold Butyl Attachment Kit
Metal Roof:
Standing Seam attachments, PM-9000S, PM Adjust Slotted
Tile Roofs:
SOLARHOOKS Rail Attachments (AT1, CT1, CT2, CT5)

Attachment Spacing: Per U-Builder 2.0 Engineering report.

Cantilever: The maximum rail cantilever length is 1/3 of the adjacent span.

Clearance: 2” to 10” clear from the top of the roof to the top of the PV panel.

Tolerance(s): 1.0” tolerance for any specified dimension in this report is allowed for installation.

Installation Orientation: See NXT UMOUNT Installation Guide.
Landscape - PV Panel long dimension is parallel to ridge/eave line of the roof and the PV panel is mounted on the long side.
Portrait - PV Panel short dimension is parallel to ridge/eave line of the roof and the PV panel is mounted on the short side.

Components and Cladding Roof Zones:
The Components and Cladding Roof Zones shall be determined based on ASCE 7-10 Component and Cladding design.

Notes:

1. U-Builder 2.0 Online tool analysis is only for Unirac NXT UMOUNT systems and do not include roof capacity check.
2. Risk Category II per ASCE 7-10.
3. Topographic factor, kzt is 1.0.
4. Array Edge Factor $Y_E = 1.5$
5. Average parapet height is 0.0 ft.
6. Wind speeds are LRFD values.
7. Attachment spacing(s) apply to a seismic design category E or less.

Design Responsibility:
The U-Builder 2.0 design software is intended to be used under the responsible charge of a registered design professional where required by the authority having jurisdiction. In all cases, this U-Builder 2.0 software should be used under the direction of a design professional with sufficient structural engineering knowledge and experience to be able to:

- Evaluate whether the U-Builder 2.0 Software is applicable to the project, and
- Understand and determine the appropriate values for all input parameters of the U-Builder 2.0 software.

This letter certifies that the Unirac NXT UMOUNT system, when installed according to the U-Builder 2.0 engineering report and the manufacture specifications is in compliance with the above codes and loading criteria.

This certification excludes evaluation of the following components:

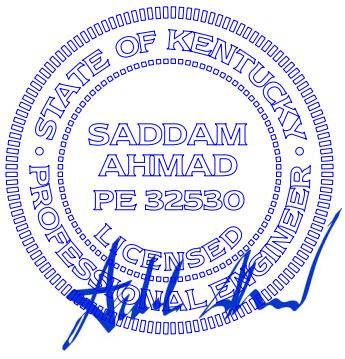
1) The structure to support the loads imposed on the building by the array; including, but not limited to: strength and deflection of structural framing members, fastening and/or strength of roofing materials, and/or the effects of snow accumulation on the structure.
2) The attachment of the NXT UMOUNT Rails to the existing structure.
3) The capacity of the solar module frame to resist the loads.

This requires additional knowledge of the building and is outside the scope of the certification of this racking system.

Please feel free to call or email for any questions or clarifications

Prepared By

Engineering Alliance, Inc
Sugar Land, TX



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