



Descriptive Report and Test Results

MASTER CONTRACT: 274725

REPORT: 70214420

PROJECT: 80085907

Edition 1: May 7, 2019; Project 70214420 - Irvine
Issued by Uday Singh

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Report pages reissued

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PRODUCTS

CLASS - C531302 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems
CLASS - C531382 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems -
Certified to US Standards

Model: K-Rack

Kinetic K-Rack is an extruded aluminum PV racking system that is installed parallel to the roof in landscape or portrait orientations. The systems listed are designed to provide bonding/grounding, and mechanical stability for photovoltaic modules. The system is secured to the roof with the L-Bracket and various types of mounts. Modules are secured to the racking system with aluminum mid clamps and aluminum end clamps. The modules are bonded to the racking system through the use of the bonding mid clamps utilizing the piercing WEEB-M-KR or SBWK-312 bonding washers.

The grounding of the system is intended to comply with the latest edition of the National Electrical Code, to include NEC 250 & 690. Local code compliance is required, in addition to national codes. All grounding/bonding connections are to be torqued in accordance with the Installation Manual and the settings used during the certification testing for the current edition of the project report.

Mechanical ratings UL 2703:

Downward Design Load (lb/ft²)	75.3
Upward Design Load (lb/ft²)	33.4
Down-Slope Load (lb/ft²)	5.0

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LTR-AE-001-2012:

Downward Design Load (lb/ft²/Pascal)	112.78/5400
Upward Design Load (lb/ft²/Pascal)	33.4/2400

System is not fire rated.

Conditions of Acceptability:

Installation is subject to acceptance of the local inspection authorities having jurisdiction. The certification of these products relates only to the methods of installation, bonding, and grounding as outlined in the Installation Manual for each product.

APPLICABLE REQUIREMENTS

- | | |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| UL 2703-1st Edition | - Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels. |
| LTR AE-001-2012 | - List of Technical Requirements for Photovoltaic Module and Panel racking Systems |

MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

The following markings appear on the End clamp by adhesive label:

1. Submitter's name and/or CSA Master Contract number "274725";
2. Model designation;
3. Manufacturing date;
4. System not fire rated;
5. Design load rating/designation of information location in Installation Manual;

Nameplate adhesive label material approval information:

Diversified labeling solutions inc. Material SFT 00. File number MH25350.

ALTERATIONS

Not Applicable

FACTORY TESTS

Not Applicable

SPECIAL INSTRUCTIONS FOR FIELD SERVICES

1. Component descriptions marked with either the "(INT)" or "(INT*)" identifiers may be substituted with other components providing the requirements specified under the notes in the "Description" are complied with.
2. Components are not assembled in the factory but in the field. Final product is the assembly of components.
3. Not all components will not be present at the factory. Please check for the documents (purchase orders/order management software/material management software)

COMPONENT SPECIAL PICKUP

1. Component descriptions marked with the identifier "(CT)" are subject to annual pickup and Conformity Testing.





DESCRIPTION

Notes:

1. Component Substitution
 - a) Critical components (those identified by mfr name, cat no), which are NOT identified with either "INT" or "INT*" are not eligible for substitution without evaluation and report updating
 - b) The term "INT" means a "Certified" and/or "Listed" (or a "Recognized" and/or "Accepted") component may be replaced by one "Certified" and/or "Listed" by another certification organization accredited by the appropriate accreditation body or scheme requirements to the correct standard, for the same application; providing the applicable country identifiers are included and requirements in item "d" below are complied with.
 - c) The Term "(INT*)" means a "Recognized" and/or "Accepted" component may be replaced by a component that is CSA Certified. The applicable country identifiers shall be included, the requirements in item "d" below as well as any "conditions of suitability" for the component (as recorded in this descriptive report) shall be complied with;
 - d) Components which have been substituted, must be of an equivalent rating, configuration (size, orientation, mounting) and the applicable minimum creepage and clearance distances are to be maintained from live parts to bonded metal parts and secondary parts.
 - e) Substitution of a "Certified" and/or "Listed" component with a component that is "Recognized" or "Accepted" is not permitted without evaluation and report updating.
 - f) Substitution of a "Recognized" and/or "Accepted" component by one that is not CSA Certified is not permitted without a proper evaluation as well as a report update because the Conditions of Acceptance of the original component may be different than the Conditions of Acceptance of the substitute component.

1. The system does not employ a maximum number of modules that can be installed per system.
2. Module Orientation: Portrait or Landscape.
3. The system was evaluated for use with modules up to 22.29 sq. ft.
4. See Tables 1 for customer supplied information.
5. See the attached installation manual for each model installation instructions, and system drawings.

Table 1

MODULE RACKING SYSTEM TYPE/S		
Model	K-Rack	
Fire Ratings	NA	
Max branch circuit overcurrent-protection device (A)	30	
IDENTIFICATION OF COMPONENTS AND MATERIALS		
Rapid Rail :		Part Number: KRAPID1-XX-F F: M (Mill Finish) C (Clear Anodized) B (Black Anodized) XX: Size (in): 24 - 600 Material: Extruded Aluminum
Ground Hog Rail :		Part Number : KMGHR-XX-M XX: Size (in): 24 - 600 F: M (Mill Finish) C (Clear Anodized) UBS (Blue Skin) Material: Extruded Aluminum
Venture Rail..... :		Part Number : KVRXXX-M XX: Size (in): 24 - 600 Material: Extruded Aluminum
Hat Rail :		Part Number: KSGM-XXH XX: Size (Modules): 6,8,10 Material: Galvanized Steel

Adjustable Ground Mount Micro Inverter Mounting Kit..... :		Part Number: KSGMM-G Material: Galvanized Steel
Joiner..... :		Part Number : KJS2 F: Finish: MM (Mill Finish) Material: Aluminum
Joiner with bonding..... :		Part Number : KJS2W-F F: Finish: MA (Mill Finish) BA (Black Anodized) CA (Clear Anodized) Material: Aluminum SBW K-312 used is integrated with joiner.
L Bracket :		Part Number : KLBX-F X: Size (in): 2" 3" 4" 5" F: Finish: MM (Mill Finish) CM (Clear Anodized) BM (Black Anodized) Material: Aluminum
L Bracket Kit With 3/8" Clearance Slot :		Part Number : KLBX-F-37 Material X: Size (in): 3" 4" F: Finish: MM (Mill Finish) CM (Clear Anodized) BM (Black Anodized) Material: Aluminum
Universal "L" With Butyl Tape :		Part Number : KVLM-3 Material: Aluminum
Hanger Bolt..... :		Part Number : KHHB-X X: Length (in): 2" 3" 4" 5" 6" Material: Stainless Steel

E-Jot Hanger Bolt..... :		Part Number : JT3-SB-8.0xL L: 85,115,155,195 Material: Stainless Steel Part Number: JA3-SB-8.0xL L:80,100,130,150,180,200 Material: Stainless Steel
Hippo Mount..... :		Part Number : KSHB-X X: Lag Bolt Size (in): 4" 5" Material: Aluminum
Regular Standing L- Clamp :		Part Number : KHSL-F F: Finish: MM (Mill Finish) CM (Clear Anodized) BM (Black Anodized) Material: Aluminum
Large Standing L- Clamp :		Part Number : KHSL-F-L F: Finish: MM (Mill Finish) CM (Clear Anodized) BM (Black Anodized) Material: Aluminum
U-Bracket Clamp Kit For Pipe..... :		Part Number : KHUXX-MM XX: Size of Pipe: 15 (1 1/2") 20 (2") Material: Aluminum
Shingled Roof Mounting Kit..... :		Part Number : KFLK-3 Material: Aluminum
Shingled Roof Mounting Kit With Riser Block :		Part Number : KFLR-315 Material: Aluminum

Square Roof Bracket Kit..... :		Part Number : KSRB-X X: Lag Bolt Size (in): 3" 4" 5" Material: Aluminum
End Clamp Kit for Mill Finish Rail..... :		Part Number: KECXX-MM KEWCXX-MM XXXX: Size (mm): 3037 (31mm – 37mm) 3843 (38mm-43mm) 4450 (44-50) Material: Aluminum
End Clamp Kit for Anodized Rail..... :		Part Number: KECXX-F KEWCXX-F XXXX: Size (mm): 3037 (31mm – 37mm) 3843 (38mm-43mm) 4450 (44-50) F: Finish: CA (Clear Anodized) BA (Black Anodized) Material: Aluminum
End Clamp Kit for Galvanized Rail :		Part Number : KECXX-G KEWCXX-G XXXX: Size (mm): 3037 (31mm – 37mm) 3843 (38mm-43mm) 4450 (44-50) Material: Aluminum
Mid Clamp With Integrated Bonding..... :		Part Number : KMWCXXXX-MM XXXX: Size (mm): 3037 (31mm – 37mm) 3843 (38mm-43mm) 4450 (44-50) Finish: Mill Finish Material: Aluminum

Mid Clamp With Integrated Bonding for Anodized Rail..... :		Part Number : KMWCXXXX-F XXXX: Size (mm): 3037 (31mm – 37mm) 3843 (38mm-43mm) 4450 (44-50) F:Finish: CA (Clear Anodized) BA (Black Anodized) Material: Aluminum
Mid Clamp With Integrated Bonding for Galvanized Rail..... :		Part Number: KMWCXXXX-G XXXX: Size (mm): 3037 (31mm – 37mm) 3843 (38mm-43mm) 4450 (44-50) Material: Aluminum
WEEB-M-KR		Part Number: WEEB-M-KR-C C:Colour: __ (Stainless) B (Black) Used with mid clamps and joiners. Material: Stainless Steel
SBWK-312		Part Number: SBWK-312-C C:Colour: __ (Stainless) B (Black) Used with mid clamps and joiners Material: Stainless Steel
Kinetic Ground Lug For Mill Finish Rails		Part Number: KHGLUG-M Material: Aluminum
Kinetic Ground Lug for Anodized Rails . :		Part Number: KHGLUG-A Material: Aluminum

Kinetic Ground Lug for Galvanized Steel:		Part Number: KHGLUG-G Material: Aluminum
Top Mount Micro Inverter Kit For Anodized Rails..... :		Part Number: KHEN-A Material: Aluminum
Short Side Mount Micro Inverter Kit.....		Part Number: KHMNS-A Material: Aluminum
Side Mount Micro Inverter Kit..... :		Part Number: KHMN-A Material: Aluminum
Kinetic Rail Jumper Kit for Anodized Rail..... :		Part Number: KRJK-A Material: Aluminum
Installation Manual..... :	K-Rack_Installation Guide_20210617 Kinetic_List_of_Compatible_Modules_Rev6 20210615	

TEST HISTORY

Edition 1: Project 70214420

New certification project, testing was conducted as per the requirements of applicable standards for racking system “K-Rack”. System not fire rated.

Test results were found to be compliant for:

UL2703 Edition 1

Bonding Path Resistance Test: Section 13

Temperature Cycling Test: Section 17

Humidity Test: Section 18

Metallic Coating Thickness Test: Section 20

Mechanical Load Test: Section 21

Bonding Conductor Test: Section 22

LTR AE-001-2012

CAN/CSA IEC 61646

Mechanical Load Test: Section 10.16

Test report:

70214420_Kinetic Test Report Ground Lug.doc (Project 70214420)

19021-PR-L-001 Test Report.pdf (Project 70214422)

70214423_Test Report_MLT.doc (Project 70214423)

70214424_Kinetic Test Report BC.doc (Project 70214424)

Edition 2: Project 80085907

Updating report 70214420 to add PV model numbers to the approved PV module list. Evaluation only, no testing required.

Construction Review:

Construction review performed with satisfactory results.

This Edition supersedes all previous editions.

---End of Report---