

DESCRIPTION

PRODUCT COVERED:

Component - Photovoltaic Terminal Junction Boxes

Models:

USR - Junction Box Cat. Series as follows.

*SERIES	MODELS	DESCRIPTION
"MONO PIECE JUNCTION BOX"	XXXXXXXX-Y, where X can be any digit and Y is 1, 2, or 3.	Junction Box assembly consisting of base and cover described in this Report.
"MONO PIECE JUNCTION BOX"	1-XXXXXXXX-Y, where X can be any digit and Y is 1, 2, or 3.	Junction Box assembly consisting of base and cover described in this Report.

GENERAL:

USR indicates investigation to the Standard for Safety for Flat-Plate Photovoltaic Modules and Panels, UL 1703.

These devices are Photovoltaic Junction boxes for connection and mounting to PV modules where the acceptability of the combination is determined by Underwriters Laboratories Inc.

ELECTRICAL RATINGS:

SERIES (1)	MODEL	Maximum System Voltage (V dc)	Maximum Rated Current (A dc)
"MONO PIECE JUNCTION BOX"	XXXXXXXX-Y, where X can be any digit and Y is 1, 2, or 3.	600	9
"MONO PIECE JUNCTION BOX"	1-XXXXXXXX-Y, where X can be any digit and Y is 1, 2, or 3.	600	11

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(1) Series variations -

The models of this series are similar in construction. The variations only differ in the location of connection access and dimensions of the enclosure base as shown in ILL. 2.

All models described in this report are provided with specific types of bypass diodes, which have been assessed for use with each particular model junction box - see Engineering considerations for more details. Provision of the diodes as noted in the construction details is not optional.

The following assemblies as described in illustrations were evaluated by Underwriters Laboratories Inc.

ILLUSTRATIONS:

Table A below describes the model differences in this series:

ILL.	p/n No.	DESCRIPTION
3	1554337-1, 1-1554337-1, 2134417-1, and 1-2134417-1	JB base enclosure for connection access (plus)
3	1554337-2, 1-1554337-2,, 2134417-2, and 1-2134417-2	JB base enclosure without connection access (center)
3	1554337-3, 1-1554337-3, 2134417-3, and 1-2134417-3	JB base enclosure for connection access (minus)

P/N 1554337-1, 1554337-2, and 1554337-3 designates without cover and with diode Panjit Electronics Ltd type MBR1545S, and rating of 9 A.

P/N 1-1554337-1, 1-1554337-2, and 1-1554337-3 designates without cover and with diode Tyco Electronics type SL1515B, and rating of 11 A.

P/N 2134417-1, 2134417-2, and 2134417-3 designates with cover and with diode Panjit Electronics Ltd type MBR1545S, and rating of 9 A.

P/N 1-2134417-1, 1-2134417-2, and 1-2134417-3 designates with cover and with diode Tyco Electronics type SL1515B, and rating of 11 A.

ENGINEERING CONSIDERATIONS (FOR ENGINEERING USE ONLY):

Use - For use only with complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

1. The Ampere rating for the junction boxes in this report is based partly on mechanical considerations, such as accepted conductor sizes, component ratings, and anticipated conditions of use.
2. The Bypass diodes provided with the products in this report has been subjected to the IEC 61215 Bypass Diode Thermal Test solely for the purpose of obtaining comparative data to be used to assess the use of future alternate diodes. The current level used for that test also establishes the maximum ampere ratings allowable for these products.
3. The bypass diode thermal test was conducted on an unpotted sample.
4. The products in this file have been assessed as a package which includes a specific manufacturer's model of bypass diode. If an alternate diode is selected for use with, or inclusion with an existing product one of the following actions shall be taken:
 - A. A new model number shall be chosen for the revised construction and any appropriate tests shall be reconducted as needed.
 - B. The original model number may be kept, but the IEC 61215 Bypass Diode Thermal test shall be conducted using the alternate diode. If potting material is allowed, an additional potted sample shall be tested. Measured temperatures for all alternate diodes must be equal to or lower than the temperatures which were obtained using the original diode during the original UL Recognition investigation.
5. The cover gasket R/C (QMFZ2) type SH871U by DOW CORNING TORAY CO LTD, used to seal enclosure cover to enclosure base, was tested for Accelerated Aging of Gaskets Test.
6. The following materials were subjected to the Accelerated Aging test for use as a gasket at a minimum thickness of 1.9 mm, with a maximum operating temperature rating of 105 C per Table 34.2 of UL 1703:

R/C (QMFZ2), Momentive Performance (E205753), Silopren LSR 3286/50, yellow.

U/C (QMFZ3), QSR (E321923), Silicone A5004GN, green. See report date 2010-12-29.
7. Use of the materials noted in Item 6 as gaskets in new or existing Recognized junction boxes noted in this Report shall be further subjected to all appropriate testing, such as, but not limited to the Water Spray Test, the Dielectric Voltage Withstand Test following Water Spray, and the Leakage Current Test following Water Spray.
8. The cover shall be provided with the enclosure base. The part numbers designating enclosure without cover is for internal client information only.

Conditions of Acceptability - In order to be judged acceptable as a component of electrical equipment, the following conditions should be met:

1. These devices are intended for use with single-conductor cable. Evaluation of the cable types allowed to be provided with these devices was limited to the following:
 - A. The UL 1703 Strain Relief test was conducted on R/C (ZKLA) Photovoltaic Wire, manufactured by NICHIGOH, 12 AWG, suitable for wet and dry locations, 90°C, metric size cable 6.8 mm outside diameter.
2. These devices should be used only where they will not interrupt current as the connectors of the junction boxes in this report have not been evaluated for disconnection under load. In addition, the need to include specific instructions in the end use equipment's manual describing the method of achieving disconnect while not under load should be considered.
3. The suitability of the attaching or mounting means of this product to an end-product Photovoltaic module shall be determined in the end use.
4. The UL 1703 Temperature, Water Spray and Humidity cycling tests, shall be conducted in the end use equipment.
5. These components use a plastic material, which has an RTI of 105°C for mechanical with impact. Consideration should be given to the end use that operating temperatures not exceed 85°C when evaluated at a 40°C ambient at full load.
6. These components are intended for use in outdoor locations.
7. In end product testing, measured diode temperatures during 50% shaded cell portion of the UL 1703 Temperature test shall not exceed the measured temperatures recorded during the bypass diode thermal test using the same model diode.