



## Listing Constructional Data Report (CDR)

1.0 Reference and Address			
Report Number	3171411PRT-002	Original Issued: 30-Jan-2009	Revised: 16-Mar-2009
Standard(s)	UL 1741 Standard for Safety for Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources. First Edition, 05/07/1999, revisions including 11/07/2005		
Applicant	RSTC Enterprises, Inc.	Manufacturer	<b>RSTC Enterprises, Inc.</b>
Address	2219 Heimstead Road Eau Claire, WI 54703	Address	2219 Heimstead Road Eau Claire, WI 54703
Country	USA	Country	USA
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Email	scapozzi@rstcenterprises.com	Email	scapozzi@rstcenterprises.com

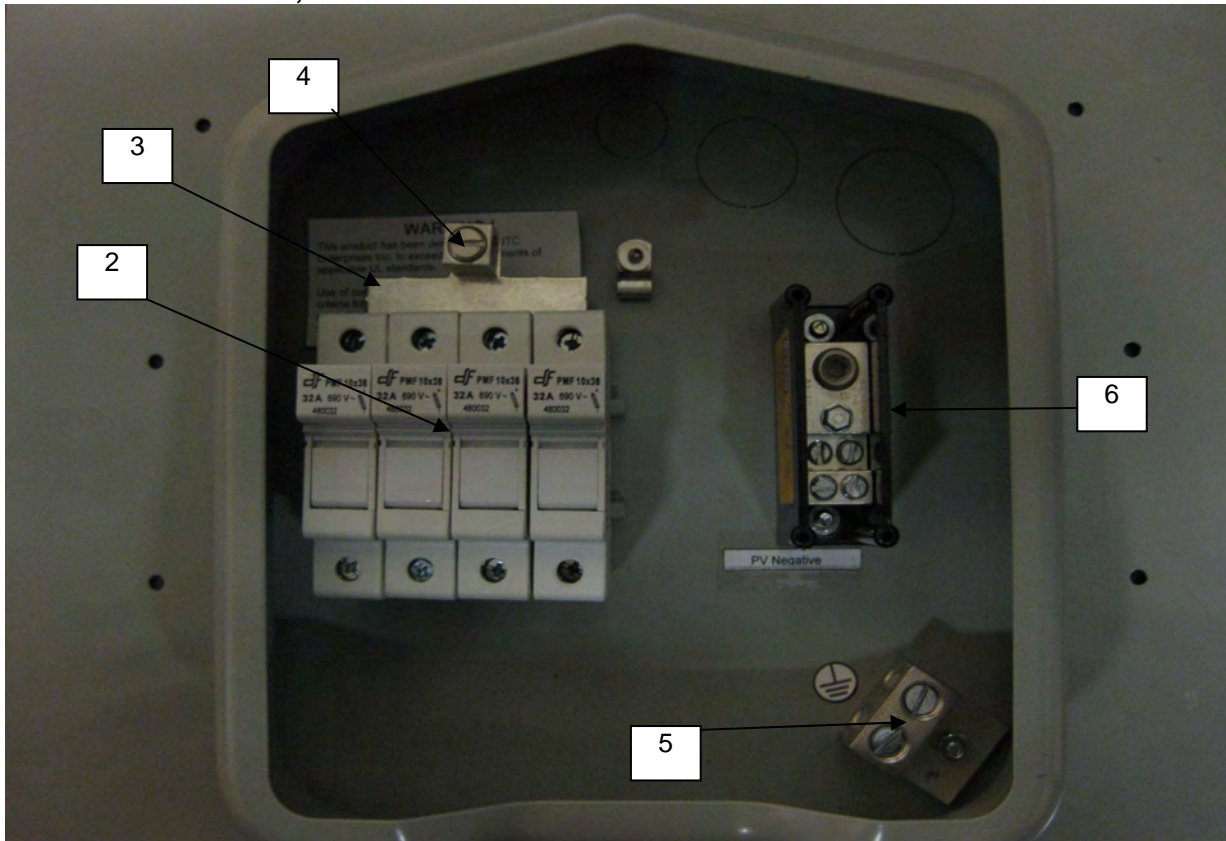
<b>2.0 Product Description</b>	
Product	DC Combiner Box
Brand name	RSTC Enterprises
Description	The product covered by this report is a DC combiner box for use with a up to four photovoltaic array inputs, and an output of a single DC source.
Models	Soladeck 0783-41 and Soladeck 0786-41
Model Similarity	Similar except for the use of the negative terminal block in unit. The 0783-41 model has its negative terminal block mounted to the enclosure in a stand-alone fashion with up to four inputs and one lug output, while the 0786-41 model has its negative terminals mounted to the DIN rail.
Ratings	600 VDC, 30 amps/fuse, 120 A total
Other Ratings	Maximum Fuse Short Circuit Current = 10kA

**3.0 Product Photographs**

**Photo 1 - External view of model 0783, also represents model 0786**

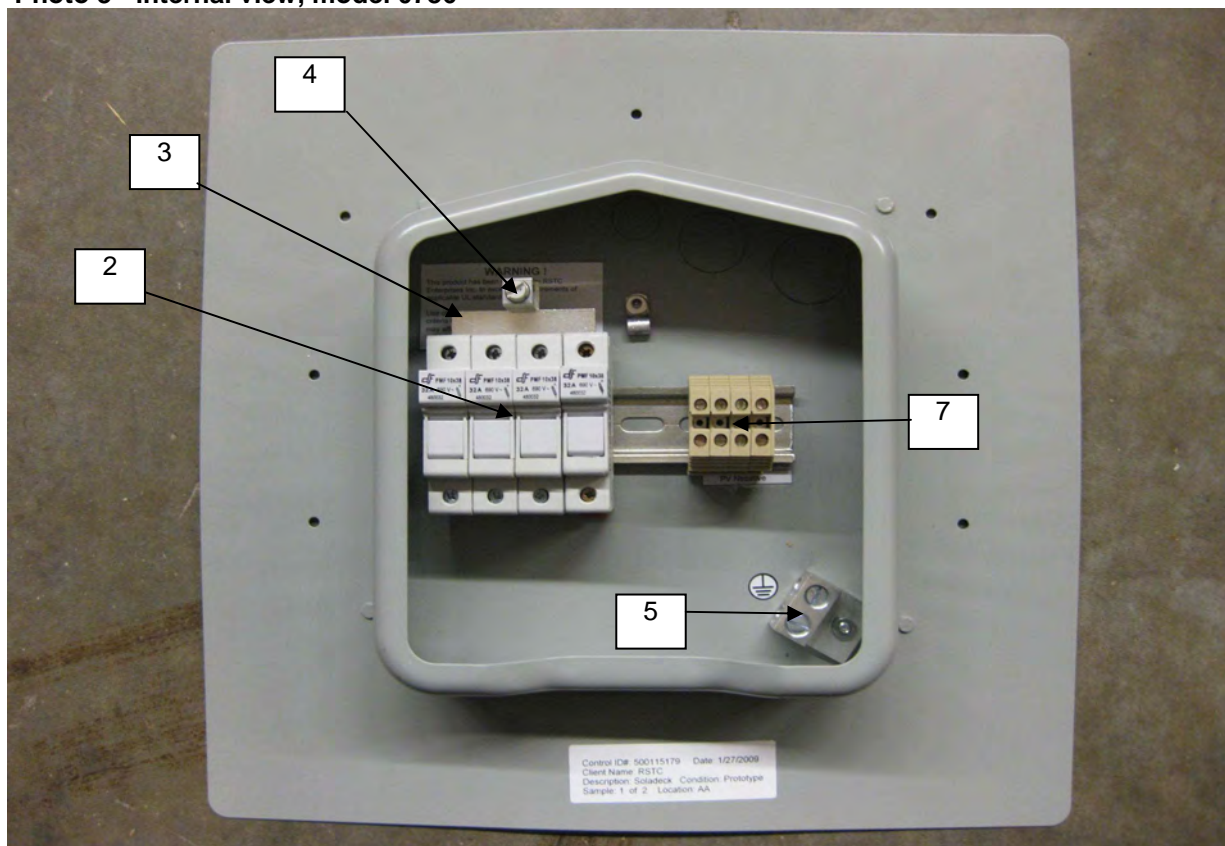


**Photo 2 - internal view, model 0783**



**3.0 Product Photographs**

**Photo 3 - internal view, model 0786**



4.0 Critical Components						
Photo #	Item no. <sup>1</sup>	Name	Manufacturer/trademark <sup>2</sup>	Type / model <sup>2</sup>	Technical data and securement means	Mark(s) of conformity <sup>3</sup>
1	1	Enclosure	RSTC		ETL listed, 18 gauge galvanized steel, 0.055 inches thick, 15 inches square at base, 8.75 inches wide by 10.75 inches long on cover. Labels adhered to enclosure to comply with UL 969	ETL
2,3	2	Fuse Holders	DF	Part No. 480032	10x38 PMF Fuse Holder (1 Pole), rated 30A, 600V, 110°C, up to 10 AWG, Secured to DIN Rail.	UR/CSA
2,3	3	Positive Bus Bar	Storm Copper	B110C	Made of tin plated copper approximately .08 inches thick. Each positive input to terminal .25 inches wide by .49 inches long. Common Bus .51 inches wide by 2.35 inches long. Provision for terminal lug approximately .53 inches square.	NR
2,3	4	Terminal Lug	Ilsco	CA4SP	Wire Rated 2-14 CU, Recognized for 75°C, 600V	UR/CSA
2,3	5	Grounding Terminal	Electric Motion	2-2/OT	Wire range two 2/0-14, Secured to enclosure by stud	UL/CSA
2	6	Negative Terminal Block	Ilsco	PDC-14-2/0-1	Wire range primary: 2/0-14, Wire range secondary: 4-14. Rated 90°C, 600V, 175 A/pole.	UR/CSA
3	7	Negative Terminal Block	IMO Precision Controls	ER6	Wire range 8-26 AWG Cu, Rated 600V, 50A	UR/CSA
	8	Alternate Negative Terminal Block	IMO Precision Controls	ER10	Wire range 6-16 AWG Cu, Rated 600V, 65A. Used in alternate construction with bus bar attached for single lug output.	UR/CSA
	9	Negative Bus Bar	Storm Copper	C110	Made of tin plated copper approximately .08" thick. Each tang to negative terminal .187" wide by .875" long.	NR

NOTES:

- 1) Not all item numbers are indicated (called out) in the photos, as their location is obvious.
- 2) "Various" means any type, from any manufacturer that complies with the "Technical data and securement means" and meets the "Mark(s) of conformity" can be used.
- 3) Indicates specific marks to be verified, which assures the agreed level of surveillance for the component. "NR" - indicates Unlisted and only visual examination is necessary. "See 5.0" indicates Unlisted components or assemblies to be evaluated periodically refer to section 5.0 for details.

## **5.0 CEC Components**

No Unlisted CEC components are used in this report.

## 6.0 Critical Features

Recognized Component - A component part, which has been previously evaluated by an accredited certification body with restrictions and must be evaluated as part of the basic product considering the restrictions as specified by the Conditions of Acceptability.

Listed Component - A component part, which has been previously Listed or Certified by an accredited Certification Organization with no restrictions and is used in the intended application within its ratings.

Unlisted Component - A part that has not been previously evaluated to the appropriate designated component standard. It may also be a Listed or Recognized component that is being used outside of its evaluated Listing or component recognition.

Critical Features/Components - An essential part, material, subassembly, system, software, or accessory of a product that has a direct bearing on the product's conformance to applicable requirements of the product standard.

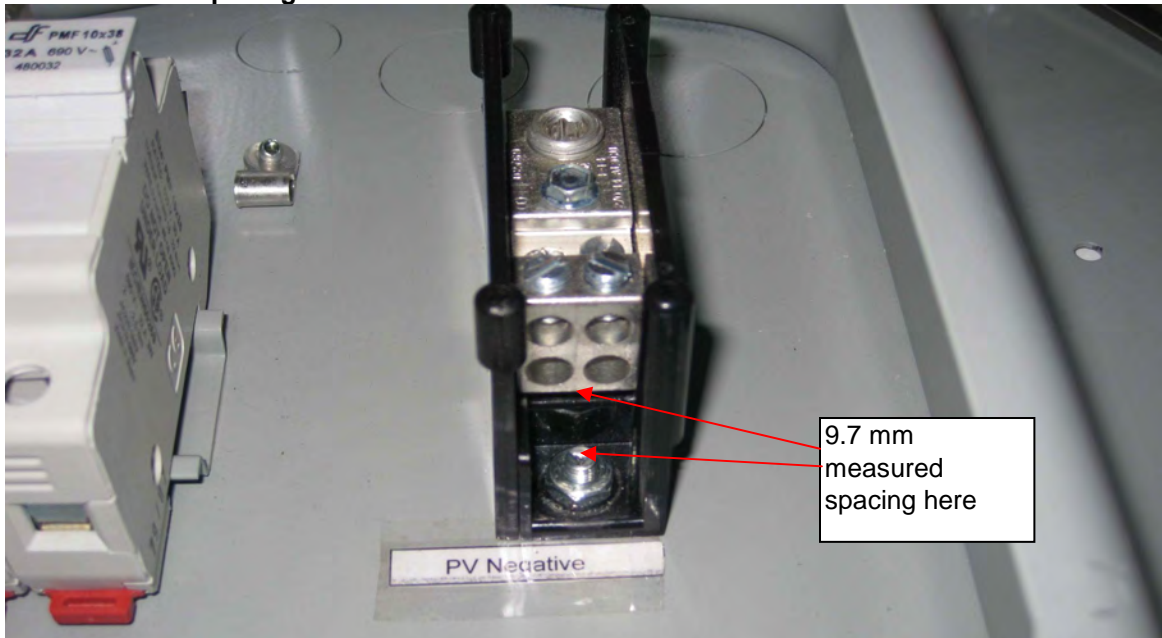
Construction Details - For specific construction details, reference should be made to the photographs and descriptions. All dimensions are approximate unless specified as exact or within a tolerance. In addition to the specific construction details described in this Report, the following general requirements also apply.

1. Spacing - In primary circuits, 58 mm minimum spacing are maintained through air and over surfaces of insulating material between current-carrying parts of opposite polarity and 9.7 mm minimum between such current-carrying parts and dead-metal parts. Refer to Illustration 1 for areas to verify. Standard requires spacing of 9.5 mm through air, 9.7 mm was measured between negative terminal block metal and the exposed metal of the mounting stud on model 0783-41 only.
2. Mechanical Assembly - Components such as switches, fuse holders, connectors, wiring terminals and display lamps are mounted and prevented from shifting or rotating by the use of lock washers, star washers, or other mounting format that prevents turning of the component.
3. Corrosion Protection - All ferrous metal parts are protected against corrosion by painting, plating or the equivalent.
4. Accessibility of Live Parts - All uninsulated live parts in primary circuitry are housed within a metal enclosure constructed with no openings other than those specifically described in Sections 4 and 5.
5. Grounding - All exposed dead-metal parts and all dead-metal parts within the enclosure that are exposed are connected to the equipment grounding terminal. The grounding terminal is secured and bonded to the enclosure, properly grounding all exposed metal parts.
7. Internal Wiring - No internal wiring.
8. Schematics - No schematics required, unit does not have component interconnection.
9. Markings - The product is marked as described in item no. 1 of Section 4.0 as follows: manufacturer's name, model number, date of manufacturer, electrical ratings, and short circuit ratings (10 kA), enclosure type designation, use of copper conductors, tightening torque reference, and appropriate terminal markings. Refer to illustration 2 for nameplate example.
10. Cautionary Markings - The following are required: Refer to Illustration 2 and 3 for marking examples.
11. Installation, Operating and Safety Instructions - Instructions for installation and use of this product are provided by the manufacturer. Refer to Illustration No(s). 4-5 for details.



**7.0 Illustrations**

**Illustration 1 - Spacings**



**Illustration 2 - Nameplate example**

**SOLADECK**  
Photovoltaic Combiner / Enclosure

Q1  Q2  Q3  Q4  09  10  11  12

**ETL** Conforms to UL 1741 1st edition.

**Listed** UL 50 Type 3R enclosure for outdoor use

Model 0783-41  Model 0786-41

Maximum Ratings: 600VDC, 120 AMPS Frequency DC

**Warning** For continued protection against risk of fire, replace only with same type and ratings of fuse with equal or greater interrupt.

**Caution** Risk of Electric Shock – DC voltage sources are terminated inside this equipment. Each circuit must be individually disconnected before servicing. When the Photovoltaic array is exposed to light, it supplies DC voltage to this equipment. Do not remove cover. Refer servicing to qualified service personnel.

Fuse holders and terminal blocks added in the field must be UL listed or recognized and meet 600 VDC 30 AMP 110C for fuse holders, 600V 50 AMP 90C for Rail mounted terminal blocks and 600 V 175 AMP 90C for Power Distribution Blocks. Use Copper Wire Conductors.

Combiner box shall be located where accessible by qualified persons only

RSTC Enterprises, Incorporated  
2219 Heimstead Road  
Eau Claire, WI 54703  
1-866-367-7782



## 7.0 Illustrations

### Illustration 3 - Warning in Instruction Manual

# WARNING! *STOP*

DO NOT WORK ON ROOF IF SURFACE IS WET,  
FROSTED, ICE OR SNOW COVERED.  
USE LADDERS SAFELY  
USE HAND & EYE PROTECTION WHEN WORKING  
WITH POWER TOOLS  
USE EXTREME CAUTION TO AVOID CONTACT  
WITH POWER LINES. CONTACT WITH POWER  
LINES, ELECTRIC LIGHTS OR POWER CIRCUITS  
MAY BE FATAL

Installation of this product should be attempted only by individuals skilled in the use of the tools and equipment necessary for installation. Protect you and all persons and property during installation. If you have any doubt concerning your competence or expertise, consult a qualified expert to perform the installation. R.S.T.C. Enterprises Incorporated assumes no responsibility for the failure of an architect, contractor, installer, or building owner to comply with all applicable laws, building codes and requirements, and adequate safety precautions.

**7.0 Illustrations**

**Illustration 4 - Installation Instructions**

# SolaDeck Installation Instructions

1. Determine the location for the SolaDeck on the roof surface.
2. Use the template from the SolaDeck Carton and position it  $\frac{3}{4}$ " below the shingle line. Trace the outline on the roof (Fig. 1).
3. Use a pry bar to loosen the shingles and remove any nails that will interfere with the flashing sliding beneath the shingles (Fig. 2).
4. Cut the roofing material to the template shape.
5. Inside of the base there are three knockout sizes. Remove the one (s) needed for the conduit fitting (s).
6. Slide the SolaDeck with flashing beneath the shingles into place and trace the knockout hole (s) (Fig. 3).
7. Drill out the traced knockout hole (s)  $\frac{1}{3}$  larger than the knockout.
8. Slide the SolaDeck base back into place and fasten it to the roof deck with the 1" truss head screws provided. (Fig 4).
9. Use a quality roof sealant to seal the shingles to the SolaDeck flashing.
10. With the base installed, you have several options to wire the SolaDeck enclosure. Use either the sump built into the base or the predetermined centering dimples to knock out a hole for the fitting or conduit size you choose.
  - Dimples at the corners of the base allow for  $\frac{1}{2}$ " or  $\frac{3}{4}$ " fittings.
  - Dimples below the sump allow for  $\frac{1}{2}$ " fittings.
  - These dimple positions accept conduit, liquid tight or strain relief fittings.
11. Peel off the tape on the foam Gasket and position it on the inside of the cover where it will contact the base sump.
12. When connections are complete, finish by fastening the cover to the base using the 8-32 screws with bonded seal washers provided.

\*NOTE: Extra steel studs are provided for installing an isolated negative terminal or power distribution block



## 7.0 Illustrations

### Illustration 5 - Installation Instructions (cont.)

#### **IMPORTANT SAFETY INSTRUCTIONS**

SAVE THESE INSTRUCTIONS- This manual contains important instructions for models 0783-41 and 0786-41 that shall be followed during installation of the combiner.

SolaDeck models are listed by ETL as PV Combiners under the standard:

UL 1741, First Edition

SolaDeck models meet UL 50 Type 3R rainproof requirements.

This enclosure is rated for up to 600 VDC fuses.

**Grounding Instructions-** Each system should be connected to a grounded, permanent wiring system. All system wiring and system grounding must comply with NEC Code, ANSI/NFPA 70-1996, or other appropriate codes, is the responsibility of the installer.



The equipment ground on SolaDeck is marked with the symbol:

**Note: Solar panels produce electrical current when lighting is present, even during overcast weather. Do not wire from the array to the SolaDeck combiner. Complete all connections inside the SolaDeck combiner first and then connect the array.**

#### **General Wiring Installation Instructions**

- Remove any necessary knockouts before securing the SolaDeck to the roof or other surface.
- Follow the mounting instructions page 3
- Slide the fuse holders onto the Din rail and lock in place.
- Secure the Bus Bar to the fuse holders.
- Install the negative power distribution block using the steel studs in the location designated for the Negative PV Model (0783).
- Install negative terminal blocks on DIN rail where designated PV Negative and lock in place. Model (0786).
- Connect all wires to fuse holders, bus bar lug and negative terminals, securing them according to the listed torque values from table on page 5.
- Conduit and Strain relief fittings and hubs must comply with UL 514B

<b>8.0 Test Summary</b>			
Evaluation Period	01/26/09-01/29/09		Project No. 3171411
Sample Rec. Date	1/26/2009	Condition	Prototype
			Sample ID. 1,2
Test Location	2595 SW 153rd Dr. Beaverton, OR 97006		
Test Procedure	Testing Lab		
Determination of the result includes consideration of measurement uncertainty from the test equipment and methods. The product was tested as indicated below with results in conformance to the relevant test criteria.			
The following tests were performed:			
Test Description	UL 1741 11/05		
	Clause		
Dielectric Voltage-Withstand Test	44		
Grounding Impedance Test	48		
Static Load Test	59		
Rain Test	61		

<b>8.1 Signatures</b>			
<b>Signature on file</b>			
A representative sample of the product covered by this report has been evaluated and found to comply with the applicable requirements of the standards indicated in Section 1.0.			
Completed by:	Joel Gregory	Reviewed by:	Ernie Fernandez
Title:	Project Engineer	Title:	Project Engineer
Signature:	<i>Signature on file</i>	Signature:	<i>Signature on file</i>

**9.0 Correlation Page For Multiple Listings**

The following products, which are identical to those identified in this report except for model number and Listee name, are authorized to bear the ETL label under provisions of the Intertek Multiple Listing Program.

<b>BASIC LISTEE</b>	RSTC Enterprises, Inc.
Address	2219 Heimstead Road Eau Claire, WI 54703
Country	USA
Product	DC Combiner Box

<b>MULTIPLE LISTEE 1</b>	None
Address	
Country	
Brand Name	

<b>ASSOCIATED MANUFACTURER</b>	
Address	
Country	

<b>MULTIPLE LISTEE 1 MODELS</b>	<b>BASIC LISTEE MODELS</b>

<b>MULTIPLE LISTEE 2</b>	None
Address	
Country	
Brand Name	

<b>ASSOCIATED MANUFACTURER</b>	
Address	
Country	

<b>MULTIPLE LISTEE 2 MODELS</b>	<b>BASIC LISTEE MODELS</b>

<b>MULTIPLE LISTEE 3</b>	None
Address	
Country	
Brand Name	

<b>ASSOCIATED MANUFACTURER</b>	
Address	
Country	

<b>MULTIPLE LISTEE 3 MODELS</b>	<b>BASIC LISTEE MODELS</b>

## **10.0 General Information**

The Applicant and Manufacturer have agreed to produce, test and label ETL Listed products in accordance with the requirements of this Report. The Manufacturer has also agreed to notify Intertek and to request authorization prior to using alternate parts, components or materials.

### COMPONENTS

Components used shall be those itemized in this Intertek report covering the product, including any amendments and/or revisions.

### LISTING MARK

The ETL Listing mark applied to the products shall either be separable in form, such as labels purchased from Intertek, or on a product nameplate or other media only as specifically authorized by Intertek. Use of the mark is subject to the control of Intertek.

### MANUFACTURING AND PRODUCTION TESTS

Manufacturing and Production Tests shall be performed as required in this Report.

### FOLLOW UP SERVICE

Periodic unannounced audits of the manufacturing facility (and any locations authorized to apply the mark) shall be scheduled by Intertek. An audit report shall be issued after each visit. Special attention will be given to the following:

1. Conformance of the manufactured product to the descriptions in this Report.
2. Conformance of the use of the ETL mark with the requirements of this Report and the Certification Agreement.
3. Manufacturing changes.
4. Performance of specified Manufacturing and Production Tests.

In the event that the Intertek representative identifies non-conformance(s) to any provision of this Report, the Applicant shall take one or more of the following actions:

1. Correct the non-conformance.
2. Remove the ETL Mark from non-conforming product.
3. Contact the issuing product safety evaluation center for instructions.

## **10.1 Evaluation of Unlisted Components**

Because Unlisted Components are uncontrolled, and they do not fall under a third party follow up program, Intertek may require these components to be tested and/or evaluated at least once annually, more often for certain components, as part of the independent certification process. The Unlisted Components in Section 5.0

**Note to Intertek Follow Up Inspector: The Component Evaluation Center, CEC, will notify you in writing when these components must be selected and sent to the CEC for re-evaluation**

Ship the samples to:  
Intertek Testing Services  
Component Evaluation Center  
13200 Levan Road  
Livonia, MI 48150, USA  
734-591-9161

Sample Disposition: Due to the destructive nature of the testing, all samples will be discarded at the conclusion of testing unless, the manufacturer specifically requests the return of the samples. The request for return **must** accompany the initial component shipment.



### **11.0 Manufacturing and Production Tests**

The manufacturer agrees to conduct the following Manufacturing and Production Tests as specified:

#### **Required Tests**

There are no Manufacturing and Production Tests required for this product. Product is intended to be assembled in the field.

