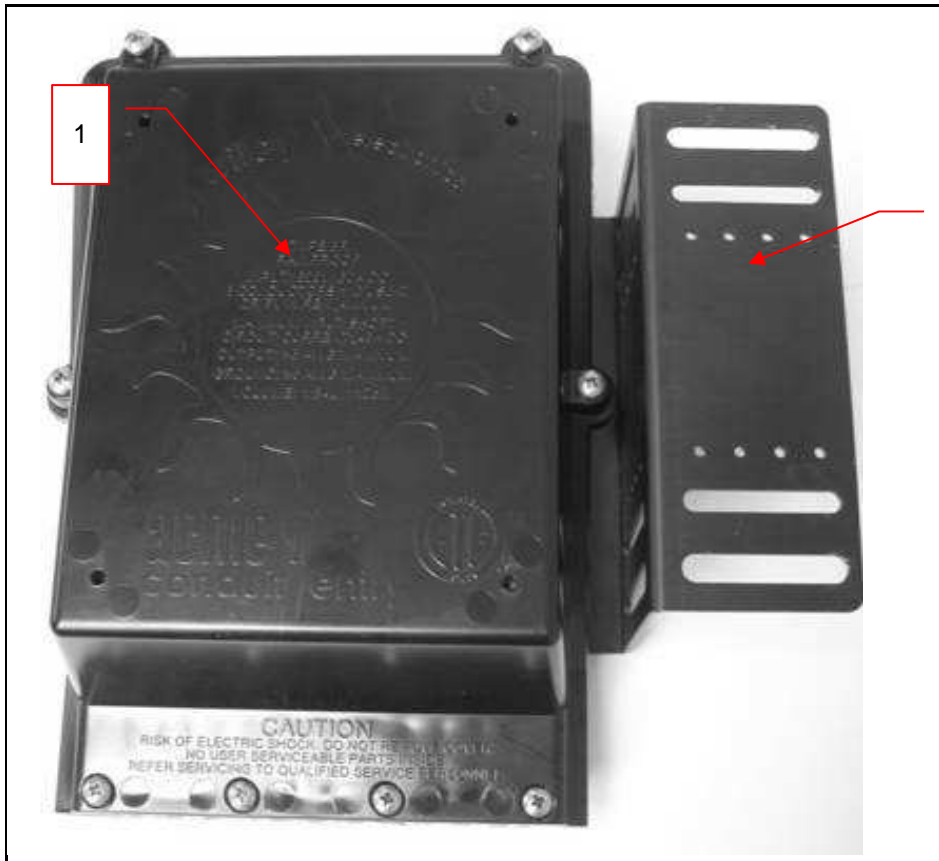


1.0 Reference and Address			
Report Number	3145135CRT-002	Original Issued: 13-Jul-2009	Revised: N/A
Standard(s)	UL Standard for Safety for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources, UL 1741. First Edition, May 7th 1999, Including Revisions through November 7, 2005.).		
Applicant	WILEY ELECTRONICS, LLC	Manufacturer	WILEY ELECTRONICS, LLC
Address	P.O. Box 361 SAUGERTIES, NY 12477	Address	1131 Kings Hwy SAUGERTIES, NY 12477
Country	USA	Country	USA
Contact	Mr. Brian Wiley	Contact	Mr. Brian Wiley
Phone	(845) 247-2875	Phone	(845) 247-2875
FAX	(845) 246-0189	FAX	(845) 246-0189
Email	btw@we-llc.com	Email	btw@we-llc.com

2.0 Product Description	
Product	PV Combiner boxes
Brand name	N/A
Description	The products covered by this report are Permanently connected units with molded polymeric enclosures used for photovoltaic wiring / disconnect.
Models	ACE-PT, ACE-1P, ACE-2P, ACE-3P, ACE- 4P, ACE-2C, ACE-3C,AND ACE-4C
Model Similarity	The products covered by this report are similar in that they use a common polymeric enclosure suitable for outdoor use.
Ratings	Voltage: 600VDC Continuous Current: 15A for smallest unit, 60A for largest unit Maximum Current: 18.75A for smallest unit, 75A for largest unit Frequency DC
Other Ratings	N/A

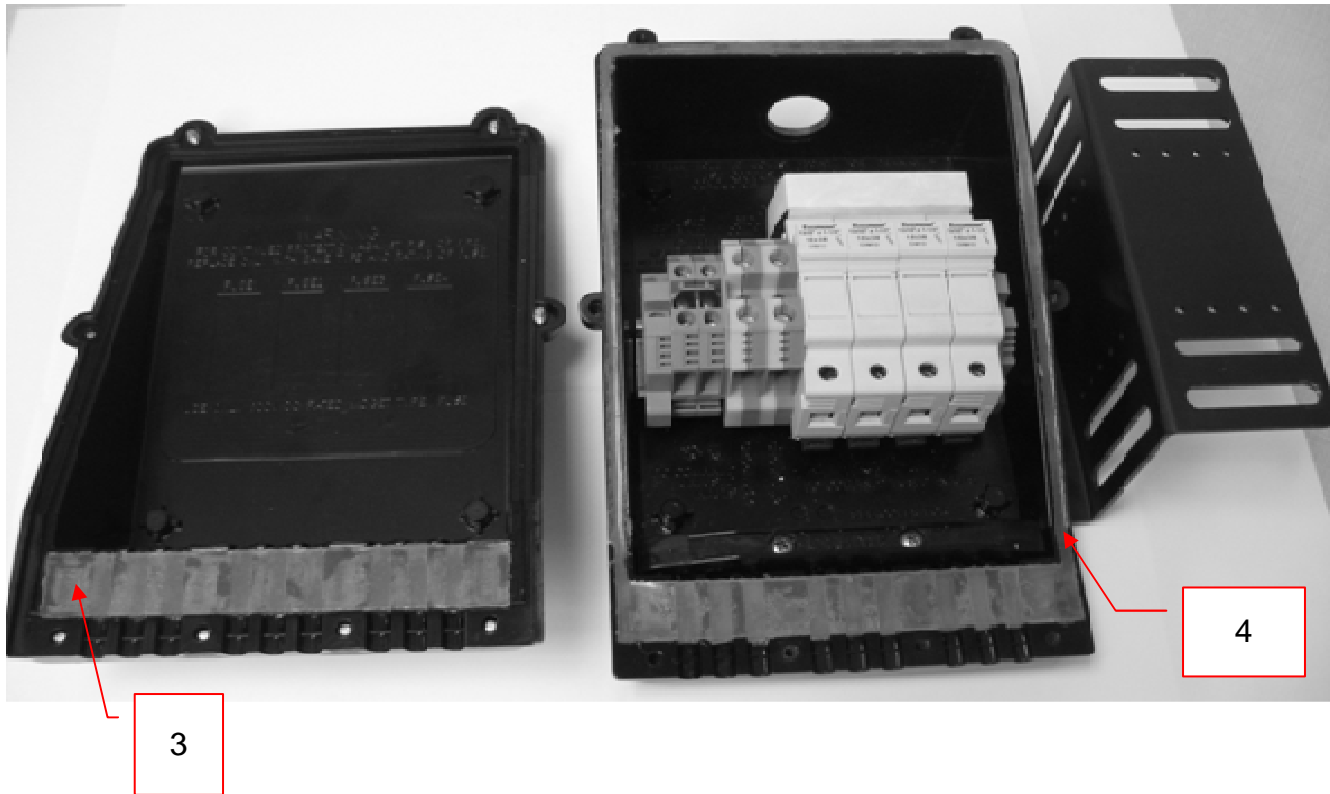
3.0 Product Photographs

Photo 1 - External view showing typical arrangement of the enclosure and the enclosure mounting bracket.



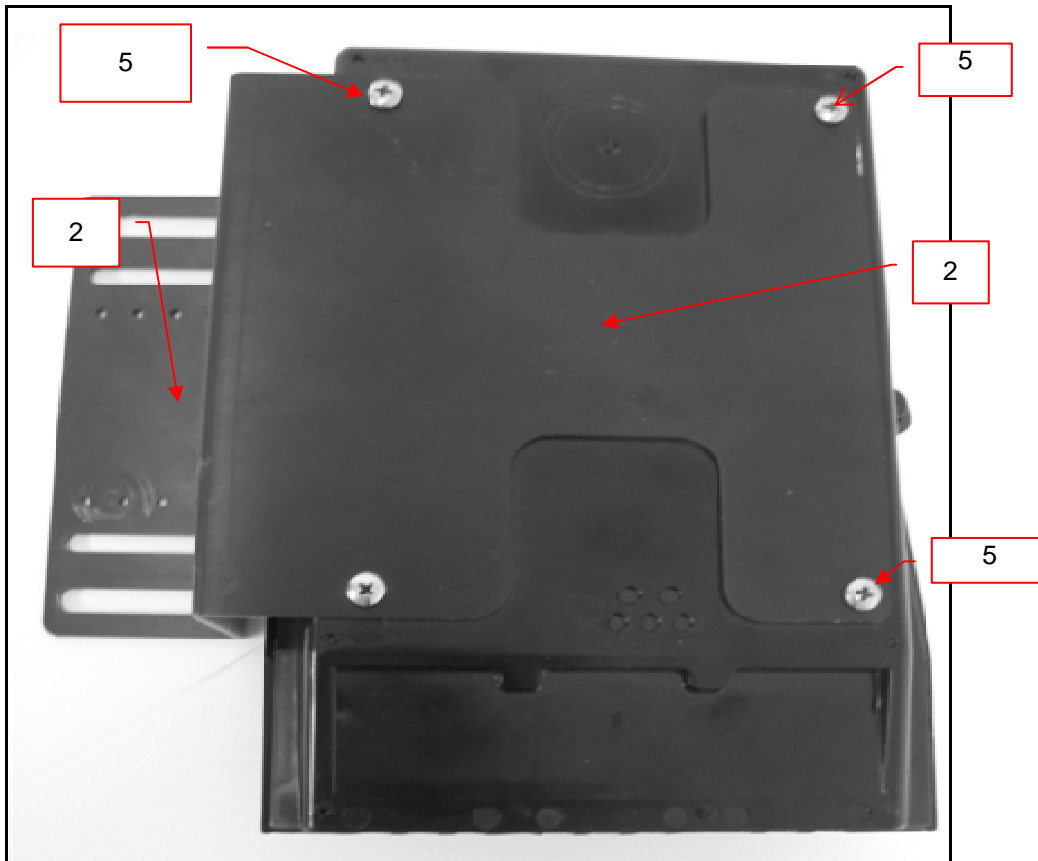
3.0 Product Photographs

Photo 2 - Internal view, showing the gaskets used along the mating surfaces of the clamshell enclosure.



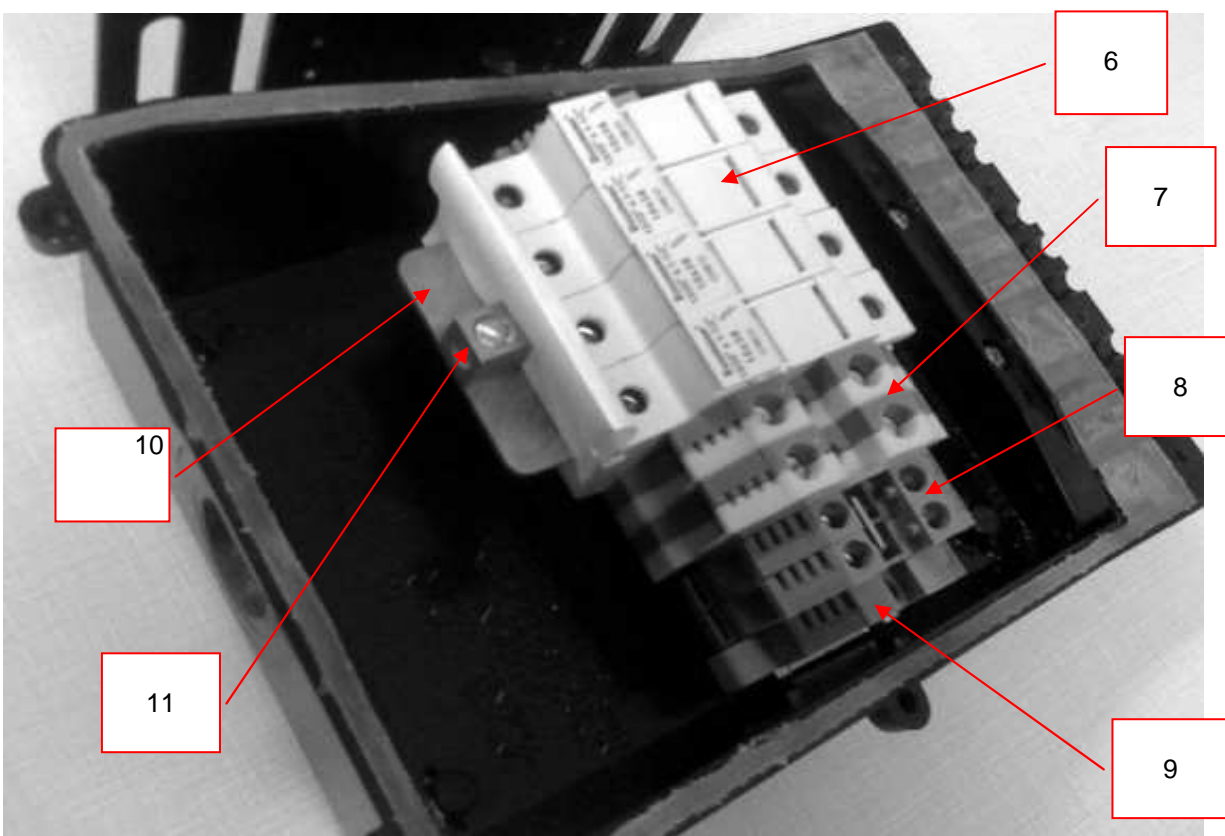
3.0 Product Photographs

Photo 3 - Shows exterior rear view of the enclosure and the mounting bracket.



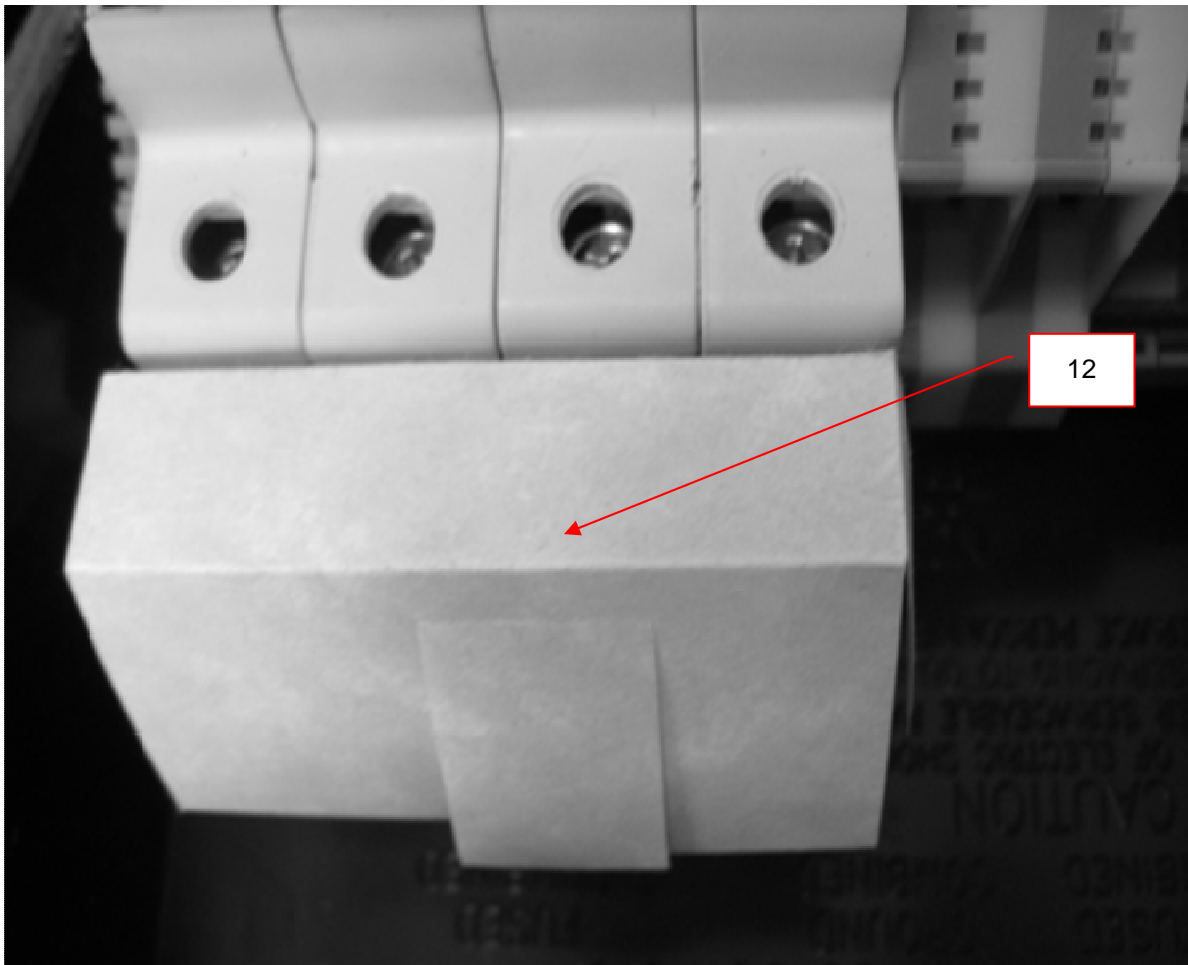
3.0 Product Photographs

Photo 4 - View showing the arrangement of the Internal Components



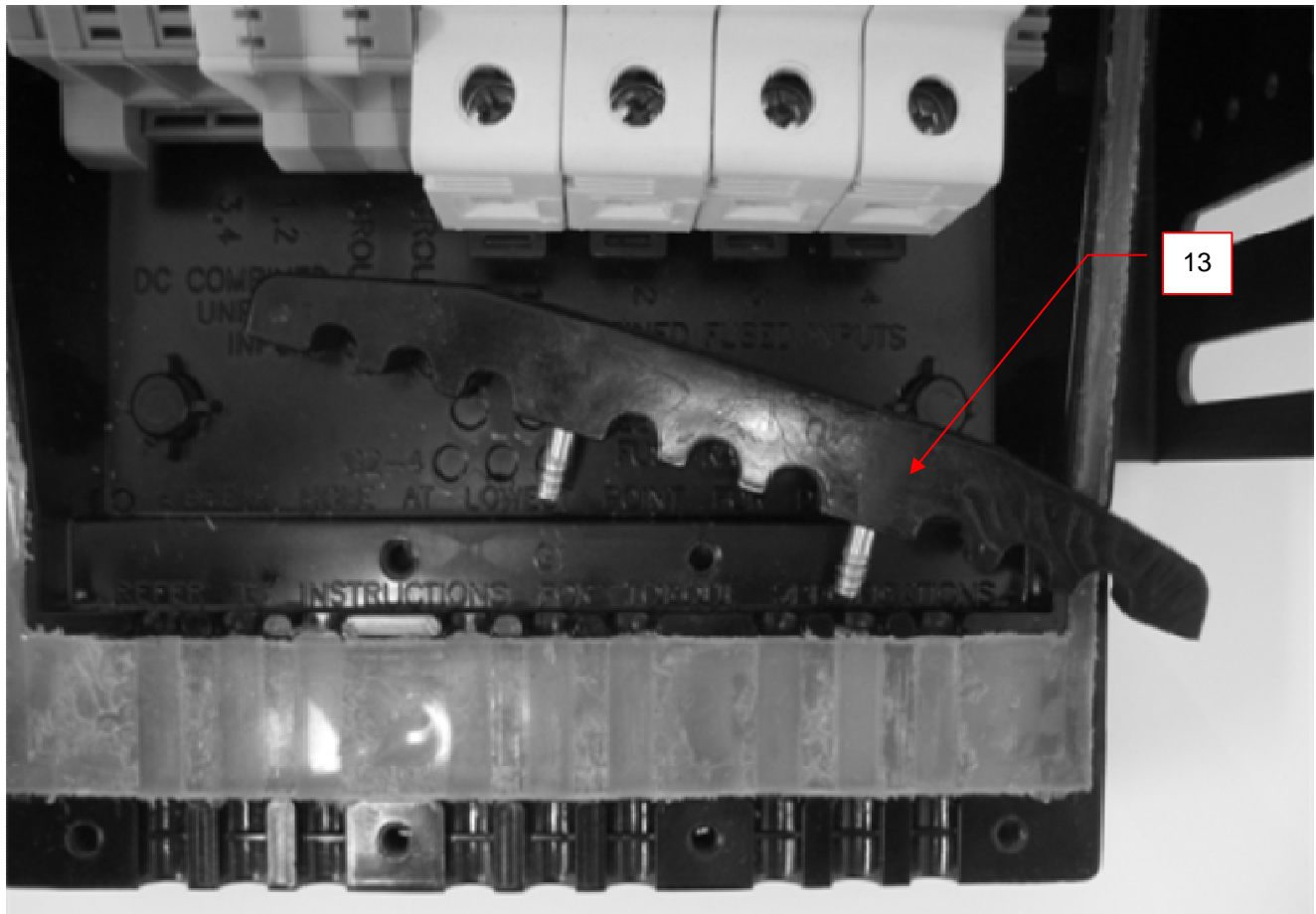
3.0 Product Photographs

Photo 5 - Shows the fiber shield over the positive bus bar.



3.0 Product Photographs

Photo 6 - Incoming Conductor Strain Relief Clamp



4.0 Critical Components						
Photo #	Item no. ¹	Name	Manufacturer/ trademark ²	Type / model ²	Technical data and securement means	Mark(s) of conformity ³
1	1	Polymeric Enclosure	Wiley Electronics	N/A	Makrolon 6487	See 5.0
	2	Mounting Bracket	Wiley Electronics	N/A	Steel .98" Integral component of device	NR
2	3	Conductor entry gasket-enclosure cover side	Wiley Electronics	N/A	Gasket material is unlisted. Requires annual evaluation.	See 5.0
	4	Conductor entry and cover gasket-enclosure bottom side	Wiley Electronics	N/A	Gasket material is unlisted. Requires annual evaluation. Material is same as item 3, therefore evaluation of item 3 also satisfies the evaluation requirement for item 4.	See item no.3
3	5	Mounting Bracket attaching screws.	N/A	Self threading screws for plastic	Standard purchased hardware	NR
4	6	Fuse Holder / positive input conductor terminals	Bussmann	CHM1D	Mounted on DIN Rail	UR, CSA
	7	Grounding conductor terminal	Automation Direct	EURO E16-25	DIN Rail mounted	UR, CSA
	8	Negative input/output conductor terminals	Automation Direct	EURO 10	DIN Rail mounted	UR, CSA
	9	End stop	Automation Direct		Mechanical component, no electrical requirements. Confirm that it is present when terminal blocks are installed.	NR
	10	Bus Bar	Wiley Electronics	Copper	Copper, cross section equal to .50" X .125". Verify width and thickness of Copper bus bar when present.	NR
	11	Positive output lug.	CMC	A 60	2-12 AL, 2-14CU 75°C	CSA, UR
5	12	Fiber shield	Wiley Electronics	Nomex	Fiber shield, installed over the output lug. Required to prevent accidental contact with otherwise exposed current carrying parts during servicing of the combiner. Confirm that the shield is installed in the device when the bus bar is present.	NR

4.0 Critical Components						
Photo #	Item no. ¹	Name	Manufacturer/ trademark ²	Type / model ²	Technical data and securement means	Mark(s) of conformity ³
6	13	Conductor strain relief clamp	Wiley Electronics	Polymeric	Input conductor strain relief clamp held in place with two self threading screws. Confirm that the strain relief is installed in the device.	NR
<p>NOTES:</p> <p>1) Not all item numbers are indicated (called out) in the photos, as their location is obvious.</p> <p>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.</p> <p>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.</p>						

5.0 Critical Unlisted CEC Components

POLYMERIC MATERIALS

Photo #	Item no.	Name	Manufacturer/Trademark	Type / model
1	1	Polymeric Enclosure	Wiley Electronics	N/A
Electrical Rating:		N.A.		Flame rating V-0
Component Standard used:		Standard for safety for Polymeric Material -Use in Electrical Equipment Evaluations, UL 746C, 6th Edition, Dated September 10th 2004, Including Revisions through February 20, 2006.		

MATERIALS LIST

Component	Manufacturer	Type/model	Dimensions/thickness/assembly information
Base material			
Polycarbonate	Bayer	6487	Use piece off of a molded enclosure.

VERIFICATION PROCESS

Frequency: Annual	Test Site: CEC	Number of samples to test: 1
Test Name	Test Parameters	
Qualitative Infrared Analysis	Compare QIA results to the results obtained in July of 2009 which are shown on illustrations 6 and 7.	

POLYMERIC MATERIALS

Photo #	Item no.	Name	Manufacturer/Trademark	Type / model
2	3	Conductor entry gasket- enclosure cover side	Wiley Electronics	N/A
Electrical Rating:		N.A.		Flame rating N.A.
Component Standard used:		UL Standard for Safety for Enclosures for Electrical Equipment, Environmental Considerations, UL 50E, 12th Edition, September 4th, 2007		

MATERIALS LIST

Component	Manufacturer	Type/model	Dimensions/thickness/assembly information
Base material			
Elastomer	Unknown	Unknown	As molded

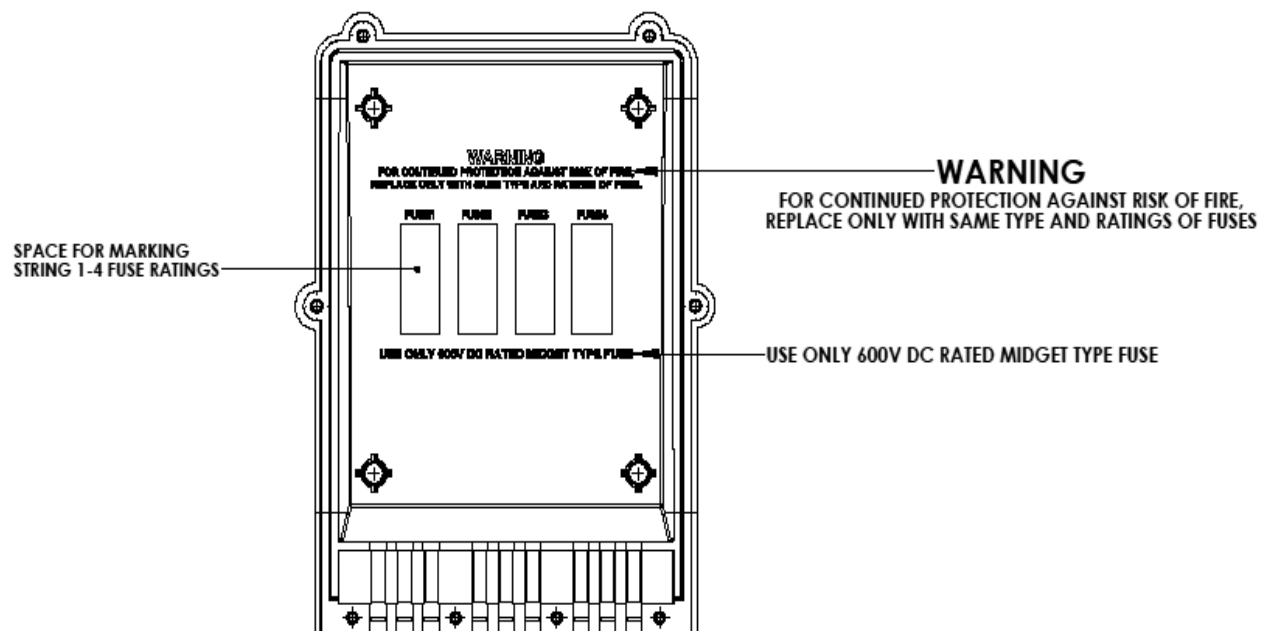
VERIFICATION PROCESS

Frequency: Annual	Test Site: CEC	Number of samples to test: 1
Test Name	Test Parameters	
Gasket tests	Clauses 8.13.2. and 8.13.3. of the UL Standard for Safety for Enclosures for Electrical Equipment, Environmental Considerations, UL 50E, 12th Edition, September 4th, 2007	

6.0 Critical Features																				
<p><u>Recognized Component</u> - 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.</p>																				
<p><u>Listed Component</u> - 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.</p>																				
<p><u>Unlisted Component</u> - 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.</p>																				
<p><u>Critical Features/Components</u> - 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.</p>																				
<p><u>Construction Details</u> - 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.</p>																				
1.	<p><u>Spacing</u> - In primary circuits, inch (mm) minimum spacings are maintained through air and over surfaces of insulating material between current-carrying parts of opposite polarity and between such current-carrying parts and dead-metal parts.</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;"></td> <td style="width: 25%; text-align: center;">Through Air</td> <td style="width: 25%; text-align: center;">Over Surface</td> <td style="width: 25%; text-align: center;">To Enclosure</td> </tr> <tr> <td style="text-align: center;">Minimum Spacings, Inch (mm)</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">Voltage Involved</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">600 V</td> <td style="text-align: center;">3/8 (9.5)</td> <td style="text-align: center;">1/2 (12.7)</td> <td style="text-align: center;">1/2 (12.7)</td> </tr> </table>					Through Air	Over Surface	To Enclosure	Minimum Spacings, Inch (mm)				Voltage Involved				600 V	3/8 (9.5)	1/2 (12.7)	1/2 (12.7)
	Through Air	Over Surface	To Enclosure																	
Minimum Spacings, Inch (mm)																				
Voltage Involved																				
600 V	3/8 (9.5)	1/2 (12.7)	1/2 (12.7)																	
2.	<p><u>Mechanical Assembly</u> - Components such as switches, fuseholders, connectors, wiring terminals and display lamps are mounted and prevented from shifting or rotating by the use of lockwashers, starwashers, or other mounting format that prevents turning of the component.</p>																			
3.	<p><u>Corrosion Protection</u> - All ferrous metal parts are protected against corrosion by painting, plating or the equivalent.</p>																			
4.	<p><u>Accessibility of Live Parts</u> - All uninsulated live parts in primary circuitry are housed within a non-metallic enclosure constructed with no openings other than those specifically described in Sections 4 and 5.</p>																			
5.	<p><u>Grounding</u> - The mounting bracket must be grounded by connecting to an earth ground in the field using the bonding washers supplied.</p>																			
6.	<p><u>Internal Wiring</u> - Internal wiring is routed away from sharp or moving parts. Internal wiring leads terminating in soldered connections are made mechanically secure prior to soldering. Recognized Component separable (quick disconnect) connectors of the positive detent type, closed loop connectors, or other types specifically described in the text of this report are also acceptable as internal wiring terminals. At points where internal wiring passes through metal walls or partitions, the wiring insulation is protected against abrasion or damage by plastic bushings or grommets. All wiring is minimum 12 AWG, with a minimum rating of 600V, 75°C.</p>																			
8.	<p><u>Schematics</u> - None</p>																			
9.	<p><u>Markings</u> - The product is marked by molding into polymeric enclosure as follows: See Illustrations 1, 2 and 3 for actual, detailed markings. In addition, the corresponding catalog number of each of the devices covered by this report must be marked on the cover using a label printed on approved label stock.</p>																			
10.	<p><u>Cautionary Markings</u> - The following are required: Refer to illustrations 1 and 2 for required cautionary markings.</p>																			
11.	<p><u>Installation, Operating and Safety Instructions</u> - Instructions for installation and use of this product are provided by the manufacturer. Refer to Illustration No. 3 for details.</p>																			

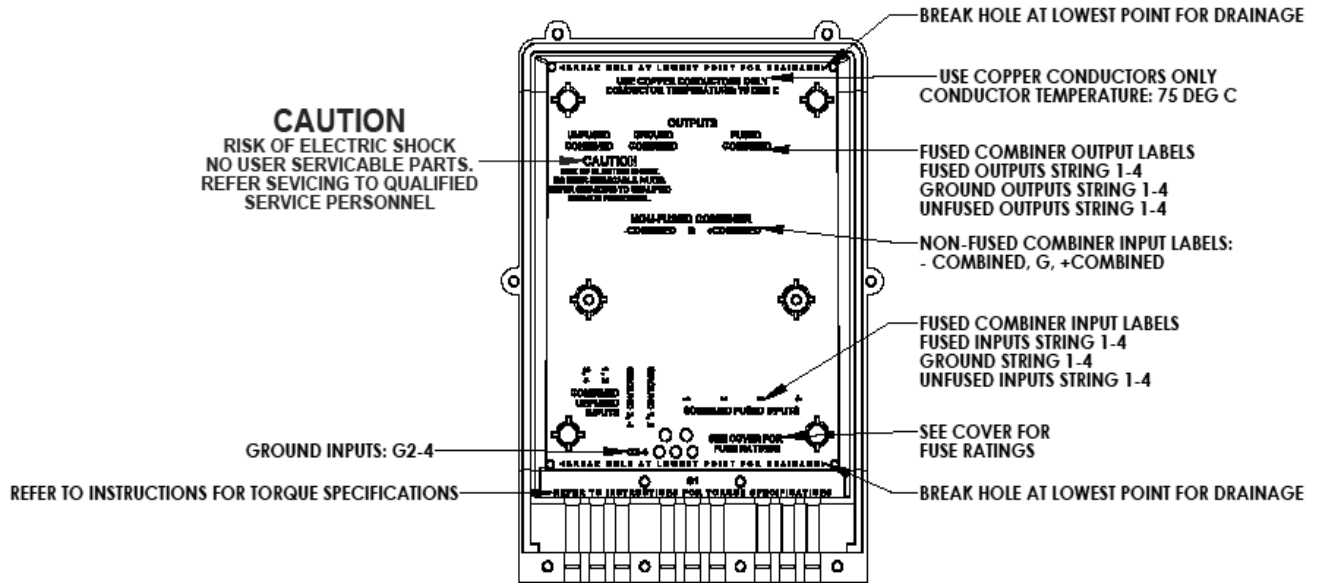
7.0 Illustrations

Illustration 1 - Back side of enclosure cover showing required markings.



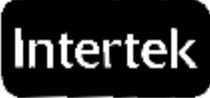

7.0 Illustrations

Illustration 2 - Back side of enclosure base showing required markings.




7.0 Illustrations

Illustration 3 - Lab report showing parameters of UV exposure test .

Accelerated Weathering Report Page 1 of 1

Testing	: Standard Practice for Xenon-Arc Exposure of Plastics Intended for Outdoor Applications	
Test Method	: ASTM D2585-99 (2008), ASTM G155-05a	
Project Number	: F20083478	Purchase Order #: 70983
Customer	: Intertek	
Attention	: George Papis	
Operator	: Frank Foy	
Date	: December 15, 2008	


 ACCREDITED
 Cert. No. 0619.01

Instrument	: Atlas Model C85 Xenon Arc Weather-Ometer® S/N CB-1797, calibrated 9/26/08	
Inner Filter Type and Age at Start	: 8 Boro Silicate 342 hours	Inner Filter Changed : Y
Outer Filter Type and Age at Start	: 8 Boro Silicate 220 hours	Outer Filter Changed : N
Irradiance at 340 nm	: 0.35 W/m ²	
Control Material	: Clear Polystyrene Lightfastness Standard	
Control Material Replacement	: Weekly	
Specimen Repositioning Cycle	: None necessary	

TEST CYCLE		
1 Historical Convention	: 102 minutes light at 63° C, 50% RH 18 minutes light and spray @ 63° C	
Date and Time samples removed	: 12/15/08 - 10 AM	

Material	Exposure Time (machine hrs)	Radiant Exposure at 340 nm (kJ/m ²)
Makrolon 6487 - Exposed 6 flex bars, 5 tensile bars	1000	1243



Results of any post exposure tests are included as separate reports.

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50 Pearl Street, Pittsfield, MA 01201
 Phone: (413) 499-0983 Fax: 499-2339
<http://www.ptli.com>


7.0 Illustrations

Illustration 4 - Lab report showing succesful results of UV exposure test .

Tensile Report Page 1 of 1

Testing	Tensile Properties	
Test Method	ASTM D 638-08	
Project Number	P20083478	Purchase Order #: 70883
Customer	Intertek	
Attention	George Pip's	
Analyst	S. Polastri	
Date	December 17, 2008	



ACCREDITED
Cert. No. 0819.01

Material	Makrolon 0487
Sample Preparation	Machined by Intertek PTL
Sample Type	ASTM Type I Tensile Bar
Sample Dimensions	0.488" x 0.177" (Average)
Cross-Head Speed	50mm/min
Extensometer	100% based on 50mm gage length. Meets minimum requirements for Practice E 83: Modulus (Class B-2) / Elongation (Class C).
Conditioning	40+ Hours At 23°C ± 2°C / 50% ± 5% RH
Exposure	Exposed (Per ASTM G155 cycle 1) for 1000 hours
Test Conditions	23°C ± 2°C / 50% ± 5% RH
Significance	ASTM D 638 specifies that strength and modulus be reported to 3 significant figures and elongation be reported to 2 significant figures



Sample Name	Test Number	Tensile Strength At Yield (PSI)	Elongation At Yield (%)	Tensile Stress At Break (PSI)	Elongation At Break (%)	Modulus Of Elasticity (PSI)
Control	1	9580	6.3	7230	60	334000
	2	9570	6.0	8240	98	364000
	3	9410	8.2	7020	53	341000
	4	9470	6.1	6980	20	389000
	5	9520	6.1	7730	90	352000
	Average		9510	6.1	7440	64
	Std. Dev.	71	0.1	538	31	14800
Exposed	1	9760	5.7	6990	15	353000
	2	9690	5.7	7110	16	348000
	3	9650	6.1	6880	25	318000
	4	9670	6.0	7040	23	316000
	5	9680	5.6	7060	28	357000
	Average		9690	6.0	7020	21
	Std. Dev.	44	0.2	87	5	19800

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Phone: (413) 499-0983 Fax: 499-2359
<http://www.ptl.com>


7.0 Illustrations

Illustration 5 - Lab report showing succesful results of Flamability test .

Flammability Report Page 1 of 1

Testing	: Test For Flammability Of Plastic Materials For Parts In Devices And Appliances	
Test Method	: UL 94 (06/02/08) 20mm Vertical Burning Test (Modified Specimen)-*	
Project Number	: P20083478	Purchase Order #: 70883
Customer	: Intertek	
Attention	: George Pিপিস	
Analyst	: D.Loehr	
Date	: December 16, 2008	



Material	: Makrolon 6487 - Control	
Average thickness	: 4.88 mm (* specimens had variable thickness along the length)	
Sample Preparation	: Machined from a finished part by Intertek PTL	
Conditioning	: 48+ hours at 23°C ± 2°C / 50% ± 5% RH	
Significance	: UL 94 specifies the use of a timing device accurate to 1 second	

Sample Number	1	2	3	4	5
Duration Of Flaming After First Application (T1) (sec)	0	0	0	0	1
Duration Of Flaming After Second Application (T2) (sec)	2	0	1	1	3
Total Afterflame (T1+T2) (sec)			8		
Afterglow after second flame application (T3) (sec)	0	0	0	0	0
Duration of flaming/glowing after second application (T2+T3) (sec)	2	0	1	1	3
Did the sample flame or glow to the holding clamp?	No	No	No	No	No
Did sample ignite surgical cotton?	No	No	No	No	No

The samples PASS requirements for UL-94V0 at the conditions outlined above



THE METHODS DESCRIBED IN THIS STANDARD INVOLVE STANDARD SIZE SPECIMENS AND ARE INTENDED TO BE USED SOLELY TO MEASURE AND DESCRIBE THE FLAMMABILITY PROPERTIES OF MATERIALS, USED IN DEVICES AND APPLIANCES, IN RESPONSE TO HEAT AND FLAME UNDER CONTROLLED LABORATORY CONDITIONS. THE ACTUAL RESPONSE TO HEAT AND FLAME OF MATERIALS DEPENDS UPON THE SIZE AND FORM, AND ALSO ON THE END-USE OF THE PRODUCT USING THE MATERIAL. ASSESSMENT OF OTHER IMPORTANT CHARACTERISTICS IN THE END-USE APPLICATION INCLUDE, BUT ARE NOT LIMITED TO, FACTORS SUCH AS EASE OF IGNITION, BURNING RATE, FLAME SPREAD, FUEL CONTRIBUTION, INTENSITY OF BURNING, AND PRODUCTS OF COMBUSTION.

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 Phone: (413) 499-0883 Fax: 499-2339
<http://www.ptll.com>


7.0 Illustrations

Illustration 6 - Fourier Transform Infrared Analysis showing enclosure material to be Polycarbonate.



FTIR Report Page 1 of 1

Testing	: Fourier Transform Infrared Analysis (FTIR)	
Test Method	: ASTM E1252-98 (2007)	
Instrument	: Thermo Nicolet Avatar 360 FTIR Spectrometer	
Project Number	: P20091716	Purchase Order #: 74876
Customer	: Intertek	
Attention	: George Papis	
Analyst	: T. Keith	Attachments: 1
Date	: July 17, 2009	



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The results of the FTIR testing are as follows:

Sample Name	Material ID
Black Part	Polycarbonate <i>(Material used in Wiley Combiner enclosure. Marked as 6487)</i>

The sample was tested as received.

Copies of any spectra used to determine the results listed above are attached.

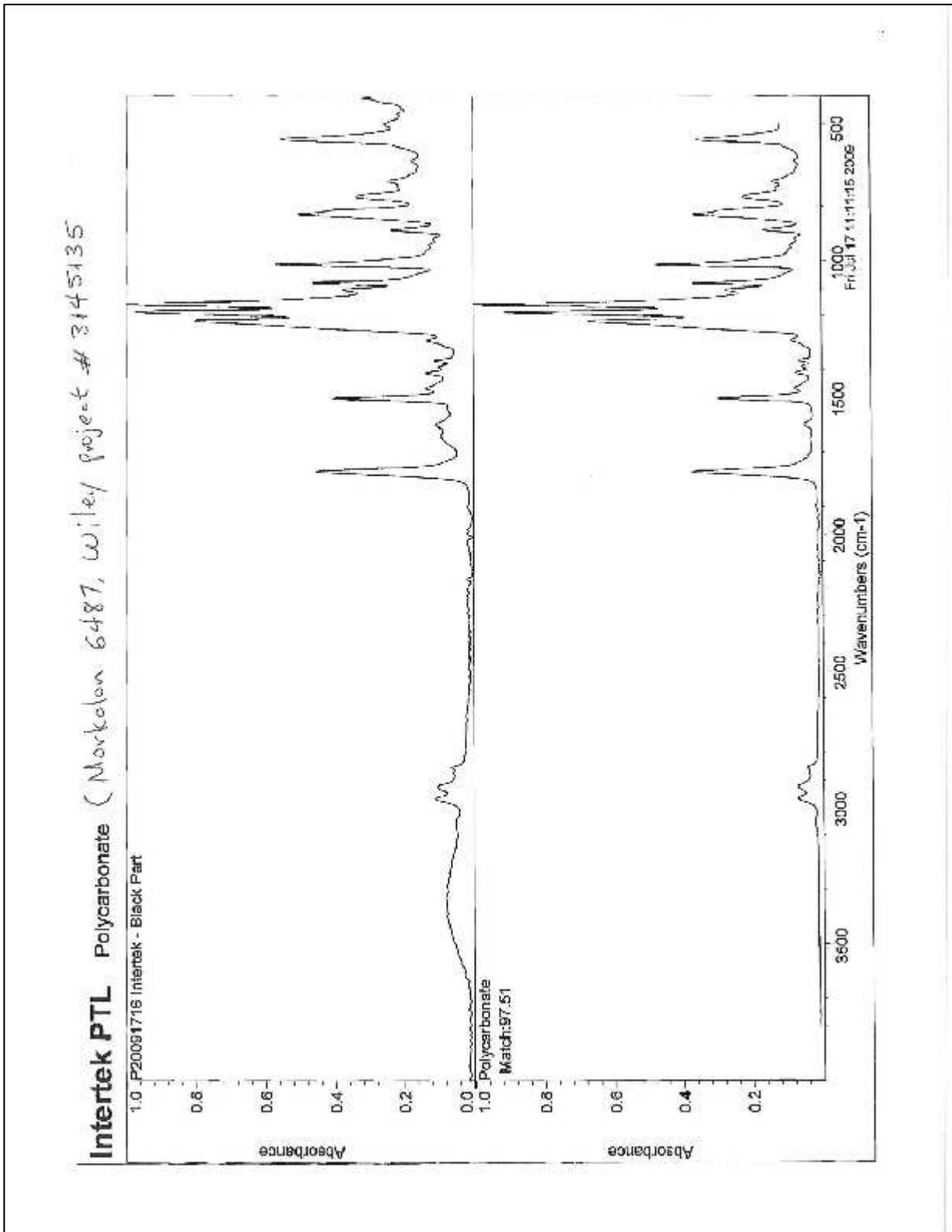
BP
7-21-2009

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<http://www.ppl.com>

7.0 Illustrations

Illustration 7 - Results of the Fourier Transform Infrared Analysis (FTIR)



7.0 Illustrations

Illustration 8 - Page of installation Manual showing the required Important Safety Instructions.

IMPORTANT SAFETY INSTRUCTIONS

This product has been designed and tested to international safety requirements to ensure your personal safety. Improper use may result in potential electric shock. To reduce the risk of personal injury, please read and follow all instructions and warnings in the installation manual.

SAVE THESE INSTRUCTIONS - This manual contains important instructions for the Wiley Electronics Acme Conduit Entry string combiner/pass-through that shall be followed during installation and maintenance of the string combiner/pass-through.

Warning:

- All electrical installation must be done in accordance with the National Electrical Code ANSI/NFPA 70, local electrical codes and the requirements of the authority having jurisdiction.
- To prevent the risk of electric shock, all wiring and connections must be performed by qualified personnel.
- Photovoltaic arrays when exposed to light create electrical energy that can be a potential electric shock hazard. Array should be covered before making connections.
- Do not exceed the maximum wire size specified in this manual. All wire sizes specified in this manual supersede the maximum allowable wire size specified on each individual field-wiring terminal.
- The terminals on both the lines and the load sides may be energized in the open position. Refer servicing to qualified service personnel.

Read all of the instructions and warning labels on the combiner/pass-through enclosure before installation.

SAVE THESE INSTRUCTIONS

7.0 Illustrations

Illustration 9 - Page of installation Manual showing the mounting bracket bonding washers.

Assembly

The ACE consists of three sub-assemblies; the Base, the Top Cover and the Clamp. The clamp functions as a strain relief and a wire guide. To ensure a proper seal, fasten all incoming wires securely using the clamp before assembling the top cover.

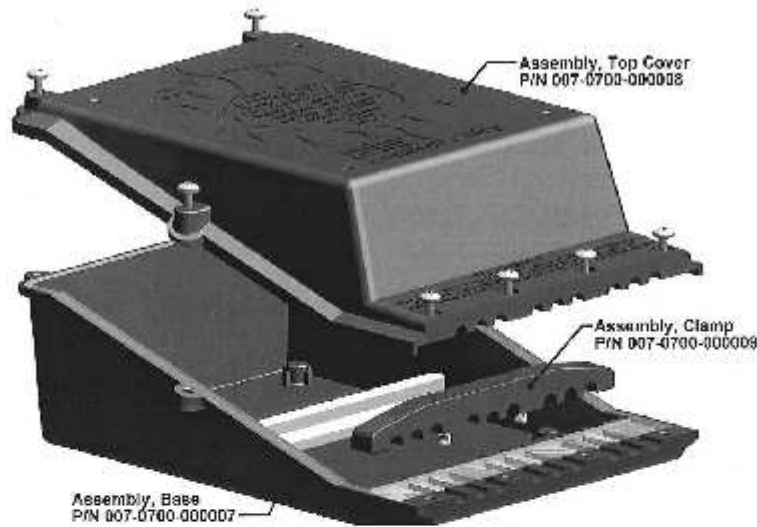


Figure 3: ACE Assembly, Exploded View

Mounting

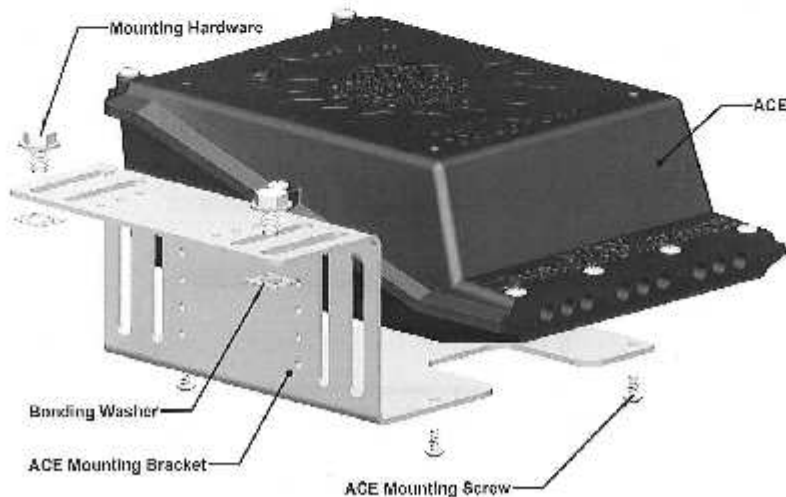




Figure 4: ACE Mounting Bracket Assembly

8.0 Test Summary			
Evaluation Period	11/24/2008 to 1/16/2009		Project No. 3145135
Sample Rec. Date	Various	Condition	Production
Sample ID.			
Test Location	3933 US Rt 11, Cortland, NY 13045 and Plastics Technology Laboratories, Pittsfield, MA 01201		
Test Procedure	Testing Lab		
<p>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.</p>			
<p>The following tests were performed:</p>			
Test Description	Standard for Safety for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources (UL 1741, 1st Edition, May 7th 1999, Including Revisions through November 7, 2005.).	Standard for Enclosures for Electrical Equipment, Non-Environmental Considerations (UL 50, 12th Edition, September 4th, 2007)	Standard for Polymeric materials-Used in Electrical Equipment Evaluations (UL 746C, 6th Edition, September 6th 2004, Including Revisions through February 20, 2006.).
Rain Test		8.3	
Pullout test		8.6.2	
Bending Test		8.6.4	
Gasket Test-Tensile Strength & Elongation		8.13.2	
Strain Relief Test	50.1		
Staic Load Test	59.1		
Flamability -127mm Flame			17 and 52
Crushing Resistance			21 and 55
Resistance to Impact			22 and 56
Mold Stress-Relief Distortion			29 and 61
UV Exposure			25 and 57
8.1 Signatures			
<p>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.</p>			
Completed by:	George Pipis	Reviewed by:	Steven Pasternack
Title:	Senior Project	Title:	Senior Staff Engineer
Signature:		Signature:	

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.

BASIC LISTEE	WILEY ELECTRONICS, LLC
Address	P.O. Box 361 SAUGERTIES, NY 12477
Country	USA
Product	PV Combiner boxes

MULTIPLE LISTEE 1	None
Address	
Country	
Brand Name	

ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 1 MODELS	BASIC LISTEE MODELS

MULTIPLE LISTEE 2	None
Address	
Country	
Brand Name	

ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 2 MODELS	BASIC LISTEE MODELS

MULTIPLE LISTEE 3	None
Address	
Country	
Brand Name	

ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 3 MODELS	BASIC LISTEE MODELS

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
ETL Component Evaluation Center
3933 US Route 11
Cortland, NY 13045, USA

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

Dielectric Voltage Withstand Test

11.1 Dielectric Voltage Withstand Test

Method

One hundred percent of production of the products covered by this Report shall be subjected to a routine production line dielectric withstand test.

The test shall be conducted on products, which are fully assembled. Prior to applying the test potential, all switches, contractors, relays, etc., should be closed so that all primary circuits are energized by the test potential. If all primary circuits cannot be tested at one time, then separate applications of the test potential shall be made.

The test voltage specified below shall be applied between primary circuits and accessible dead-metal parts. The test voltage may be gradually increased to the specified value but must be maintained at the specified value for one second or one minute as required.

Test Equipment

The test equipment shall incorporate a transformer with an essentially sinusoidal output, a means to indicate the applied test potential, and an audible and/or visual indicator of dielectric breakdown.

The test equipment shall incorporate a voltmeter in the output circuit to indicate directly the applied test potential if the rated output of the test equipment is less than 500VA.

If the rated output of the test equipment is 500VA or more, the applied test potential may be indicated by either:

- 1 - a voltmeter in the primary circuit;
- 2 - a selector switch marked to indicate the test potential; or
- 3 - a marking in a readily visible location to indicate the test potential for test equipment having a single test potential output.

In cases 2 and 3, the test equipment shall include a lamp or other visual means to indicate that the test potential is present at the test equipment output. All test equipment shall be maintained in current calibration.

Products Requiring Dielectric Voltage Withstand Test:

<u>Product</u>	<u>Test Voltage</u>	<u>Test Time</u>
All products covered by this Report.	2200V	60 s

