

RECOGNIZED COMPONENT Constructional Data Report (CDR)

1.0 Reference and Address			
Report Number	100498409CRT-003	Original Issued: 29-Sep-2011	Revised: None
Standard(s)	UL1741 Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources, Second Edition, Dated January 28, 2010 CSA C22.2 No. 107.1-01 General Use Power Supplies, Reaffirmed 2006, Dated September 2001		
Applicant	Morningstar Corporation	Manufacturer	Orient Semiconductor Electronics
Address	8 pheasant Run Newtown, PA 18940	Address	16 East 3rd St N.E.P.Z. Kaohsiung, Taiwan, R.O.C.
Country	USA	Country	R.O.C
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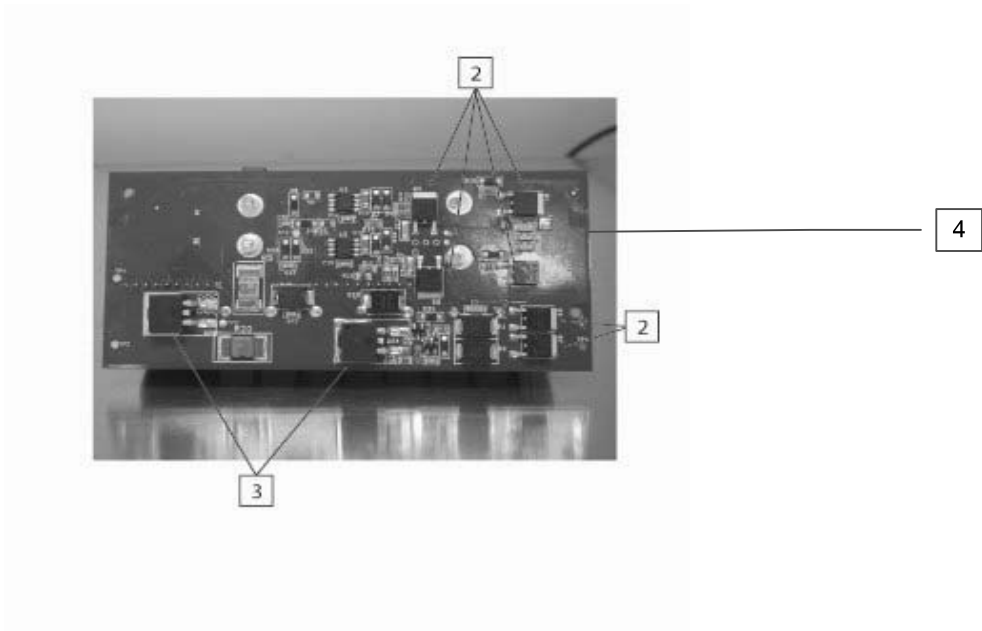
2.0 Product Description									
Product	Solar Charge Controller								
Brand name	NA								
Description	The product covered by this report is to be applied with PV modules to charge batteries and supply DC load.								
Models	SS-MPPT-15L								
Model Similarity	NA								
Ratings	<table border="0"> <tr> <td style="padding-left: 40px;">System Voltage</td> <td style="text-align: right;">12/24VDC</td> </tr> <tr> <td style="padding-left: 40px;">Max Solar Voltage</td> <td style="text-align: right;">75VDC</td> </tr> <tr> <td style="padding-left: 40px;">Max Solar Current</td> <td style="text-align: right;">15A</td> </tr> <tr> <td style="padding-left: 40px;">Max Load Current</td> <td style="text-align: right;">15A</td> </tr> </table>	System Voltage	12/24VDC	Max Solar Voltage	75VDC	Max Solar Current	15A	Max Load Current	15A
System Voltage	12/24VDC								
Max Solar Voltage	75VDC								
Max Solar Current	15A								
Max Load Current	15A								
Other Ratings	Ambient Temperature: -40°C to +60°C								
Conditions of Acceptability	<p>The products covered in this Report are incomplete in construction features or limited in performance capabilities and are intended for use and evaluation in other products. Consideration should be given to the following when the component is used in or with another product.</p> <ol style="list-style-type: none"> Suitability of the enclosure should be evaluated when installed in the end product. 								

3.0 Product Photographs

Photo No.1 - Overall View



Photo No.2 - PCB Bottom View



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	Terminal Blocks	JIE KE ELECTRONICS	JK56	SOL/STR CU 10-18 AWG, 300V, 30A	UR
2	2	MOSFETs (Q7, Q1-Q5)	IR	IRLR3110ZPBF	100V, max 63A, max +175°C	NR
2	3	MOSFETs (Q24, Q25)	IR	IRF3805S	55V, 75A, max +175°C	NR
2	4	PCB	Various	FR-4	Overall dimension 3.9 x 1.8 in., 105C, UL94 V-2	UR
1	5	Potting Compound not shown	GE Plastics	PC Lexan 141R	UL94HB, Electric RTI 130°C	UR
1	6	Enclosure	Various	Various	Overall dimension 6.64 (L) x 2.52 (W) x 2.86 (H) in. THK 0.032 in., anodized aluminum.	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 perio						

5.0 Critical Unlisted CEC Components

No Unlisted CEC components are used in this report.

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>
<p>1. <u>Spacing</u> - Recognized PCB was enclosed by recognized potting compound</p>
<p>2. <u>Mechanical Assembly</u> - 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</p>
<p>3. <u>Corrosion Protection</u> - All ferrous metal parts are protected against corrosion by painting, plating or the equivalent.</p>
<p>4. <u>Accessibility of Live Parts</u> - PCB was encapsulated by Epoxy. The field wiring terminal blocks was shielded by a cover.</p>
<p>5. <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.</p>
<p>6. <u>Schematics</u> - Refer document SS_PPT_PWR Reversion 1.8 for schematics verification during Field Representative Inspection Audits.</p>
<p>7. <u>Markings</u> - Refer to Illustration No. 5 for the product marking.</p>
<p>8. <u>Cautionary Markings</u> - All cautionary markings are required to present in French and English. Refer to Illustration No.3 and 4.</p>
<p>9. <u>Installation, Operating and Safety Instructions</u> - Instructions for installation and use of this product are provided by the manufacturer. Refer to Illustration No.1and 2 for details.</p>

7.0 Illustrations

Illustration 1 - Manual Cover Page



7.0 Illustrations

Illustration 2 - Important Safety Information

1.0 Important Safety Information

Save These Instructions

This manual contains important safety, installation and operating instructions for the SunSaver solar controller.

The following symbols are used throughout this manual to indicate potentially dangerous conditions or mark important safety instructions:



WARNING:

Indicates a potentially dangerous condition. Use extreme caution when performing this task.



CAUTION:

Indicates a critical procedure for safe and proper operation of the controller.



NOTE:

Indicates a procedure or function that is important for the safe and proper operation of the controller.



WARNING:

These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that specified in the operating instructions unless you are qualified to do so.

Safety Information

- Read all of the instructions and cautions in the manual before beginning installation.
- There are no user serviceable parts inside the SunSaver. Do not disassemble or attempt to repair the controller.
- Disconnect all sources of power to the controller before installing or adjusting the SunSaver.
- There are no fuses or disconnects inside the SunSaver. Do not attempt to repair.
- Install external fuses/breakers as required.

7.0 Illustrations

Illustration No.3 - English Marking for Field Wiring



Terminal Specifications:

10.6 Lb-in (1.2 Nm)

18 - 10 AWG (1 - 5 mm²)

Solid or Stranded Wire

Use 75 °C Copper Conductors Only

See manual.

Use maximum 10 AWG wire only for field conductors.



CAUTION:
RISK OF ELECTRIC SHOCK. ENERGIZED FROM MORE THAN ONE SOURCE. EACH CIRCUIT MUST BE INDIVIDUALLY DISCONNECTED BEFORE SERVICING.



CAUTION:
Internal Temperature Compensation. RISK OF FIRE, USE WITHIN 3 m (10 ft) of BATTERIES

7.0 Illustrations

Illustration No.4 - French Marking for Field Wiring



Spécifications du terminal:

10,6 lb/po (1,2 Nm)

18 - 10 AWG (1 à 5 mm²)

Câble plein ou tressé

Utilisez uniquement des conducteurs en cuivre à 75 °C

Reportez-vous au manuel.

Utilisation maximale de 5 mm² conducteurs seulement



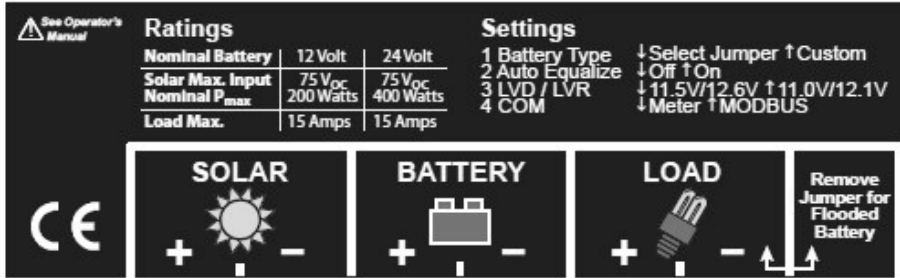
ATTENTION : RISQUE DE CHOC ÉLECTRIQUE. PLUSIEURS SOURCES PEUVENT ÊTRE SOUS TENSION. Chaque circuit doit être individuellement déconnecté avant une maintenance.





ATTENTION : Compensation interne de la température. RISQUE D'INCENDIE, UTILISATION DANS UNE LIMITE DE 3 m (10 pi) DES BATTERIES

7.0 Illustrations

Illustration No.5 - Product Nameplate



8.0 Test Summary			
Evaluation Period	Sep 05, 2011 to Sep 29, 2011		Project No. G100498409
Sample Rec. Date	29-Aug-11	Condition	Production
Sample ID.	234239		
Test Location	3933 US Route 11, Cortland NY		
Test Procedure			
<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. Due to model most features similar to products covered by ETL Recognition Report 100233405CRT-001a, dated Jan 19, 2011, we limited tests as follows</p>			
<p>The following tests were performed:</p>			
Test Description	UL1741 Clause	CSA C22.2 No.107.1-01 Clause	
Normal Operation Test	72	16.3.2	
Dielectric Voltage Withstand Test	44	6.5	
Connection Sequence Test	75	--	
Input and Output Faults	76.2	16.3.5	
Charge Controller Miswiring Test	76.3	16.3.6	
Low Voltage Disconnect Test	76.4	16.3.4	
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:	Zhiyong Hu	Reviewed by:	Thomas R. Brown
Title:	Senior Project Engineer	Title:	Engineering Team Leader
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	Morningstar Corporation
Address	8 pheasant Run Newtown, PA 18940
Country	USA
Product	Solar Charge Controller

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

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

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 indepen

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 NA Inc.
ETL Component Evaluation Center
13200 Levan Road
Livonia, MI 48150 USA
Attn: Component Evaluation Center

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 compo

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		
<u>Method</u>		
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		
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 r		
<u>Test Equipment</u>		
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 visibl		
Products Requiring Dielectric Voltage Withstand Test:		
All products covered by this Report	<u>Test Voltage</u>	<u>Test Time</u>
	1000VAC	60 s
OR		
	1200VAC	1s
OR		
	1400VDC	60 s
OR		
	1700VDC	1s

