Chirag Patel
CRESTRON ELECTRONICS INC
15 VOLVO DR
ROCKLEIGH NJ 07647-2507

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Subject: **Procedure And/Or Report Material**

The following material resulting from the investigation under the above numbers is enclosed.

Issue Date	Vol	Sec	Pages	Revised Date
2018/12/28	X5	A6001	Cert of Compliance	
2018/12/28	X5	A6001	Add New Volume	

If there are illegible images in this package, legible images may be found online via MyHome@UL under My ULReports/CDA.

Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

Please review this material and report any inaccuracies to UL's Customer Service Professionals. Contact information for all of UL's global offices can be found at http://ul.com/aboutul/locations.

If you'd like to receive updated materials FASTER, UL offers electronic access and/or delivery of this material. For more details, contact UL's Customer Service Professionals as shown above.

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MEL File

Follow-Up Service Procedure

DO NOT DISCARD THIS PAGE

It is important to keep UL Procedures and Test Reports up-to-date as new or revised pages are received.
Correct maintenance will decrease the amount of time the UL Representative spends when visiting your facility.

UL LLC offers MyHome @UL, a dedicated website providing secure access to online tools and databases that can help simplify your compliance activities. You can customize your personal MyHome @UL page to include the content needed most, including timely information about certification updates and links to other Web sites you visit regularly. Visit http://my.home.ul.com/ to sign up today!

PAGES (in content order)	FUNCTION	HOW TO UPDATE
Authorization Page	Displays the Product Category, the type of Follow-Up Service (Type R=Reexamination / Type L=Label), the File Number and the Volume Number associated with each Applicant's, Manufacturer's and Listee's company name and address.	Replace existing page by matching the UL File Number and Volume Number. Discard the older page (refer to "Issued" or "Revised" date).
Addendum to Authorization Page*	Lists the additional names and addresses of manufacturing locations, when multiple locations exist	Replace existing page by matching the UL File Number and Volume Number. Discard the older page (refer to "Issued" or "Revised" date).
Listing Mark Data (LMD), Classification Mark Data (CMD) or Recognized Component Mark Data (RCMD) Pages*#	Used only for products covered under Type R Service. Displays the correct LMD, CMD, or RCMD Mark, the Control Number for Listed and Classified categories and additional information regarding minimum size, application, procurement, and any other optional markings, in addition to the UL Mark.	Replace existing page by matching the UL File Number and Volume Number. Discard the older page (refer to "Issued" or "Revised" date).
Multiple Listing (ML) Correlation Sheet*	Correlates product model numbers between those products made by a Manufacturer for the Basic Applicant and those supplied to another company, the Multiple Listee.	Replace, add or delete page(s) with most current "Issued" or "Revised" date.
Index*	Catalogs the contents of the Procedure by some logical means, i.e. Section Number, Report Reference Number, or Issue Date.	Replace present page by matching the UL File Number, Volume Number, Page Number and most current "Revised" date.
Appendices (App.)*#	Contains instructions for the Manufacturer and UL Representative concerning specific responsibilities and required periodic tests. May also outline tests to be conducted on samples to be forwarded to UL's facilities.	Replace present page by matching the UL File Number, Volume Number, Appendix letter (eg. App. A), Page Number and most current "Revised" date.
	Standardized Appendix Pages are the same for all manufacturers within a particular product category.	Replace present page by matching the Appendix letter (eg. App. A), Page Number and most current "Revised" date.
Follow-Up Inspection Instructions (FUII) Pages*	Contains information similar to that in the Appendices. FUII Pages are issued as part of the Procedure when a UL Standard is used in conjunction with the Procedure, and are the same for all manufacturers within a particular category.	Replace present pages by matching the Page Number and most current "Issued" or "Revised" date.
Section General (Sec. Gen.)*#	Contains description, requirements, identifications and/or specifications that are common to all products covered by the entire volume and supplements the information provided in the Description Section.	Replace present page by matching the UL File Number, Volume Number, Page Number and most current "Revised" date.
Description, or Section (Sec.)*	Contains the specific description of one or more products or systems. This includes written text supplemented by photographs, drawings, etc., as necessary, to define features that affect compliance with the applicable requirements.	Replace present page by matching the UL File Number, Volume Number, Section Number, Page Number and most current "Issued" date.

***** The above page(s) may not appear in all UL Follow-Up Service Procedures; UL's Conformity Assessment Services staff determines their inclusion.
# These pages are combined in the **Generic Inspection Instructions** for International Style Reports, identified, as example by Vol. X1, X2, etc.

PLEASE NOTIFY YOUR LOCAL UL OFFICE OF ANY CHANGES IN CONTACT NAME, COMPANY NAME OR ADDRESS, SO THIS MATERIAL AND IMPORTANT INFORMATION CONTINUES TO BE DELIVERED TO YOUR FACILITY WITHOUT INTERRUPTION.

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT
(AZOT,AZOT7)

Manufacturer: SEE ADDENDUM FOR MANUFACTURER LOCATIONS

Applicant: (432288-002)
100186 (Party Site)
CRESTRON ELECTRONICS INC
15 VOLVO DR
ROCKLEIGH NJ 07647-2507

Listee: (432288-002)
100186 (Party Site)
SAME AS APPLICANT

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party. The UL Contracting Party for Follow-Up Services is listed on addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

UL further defines responsibilities, duties and requirements for both Manufacturers and UL representatives in the document titled, "UL Mark Surveillance Requirements" that can be located at the following web-site: http://www.ul.com/fus. Manufacturers without Internet access may obtain the current version of this document from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of this document or the Follow-Up Service Terms referenced below, please contact UL's Customer Service at http://www.ul.com/aboutul/locations/, select a location and enter your request, or call the number listed for that location.

The Applicant, the specified Manufacturer(s) and any Listee/Classified Co. in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable service agreement is a Global Services Agreement ("GSA"), the Applicant, the specified Manufacturer(s) and any Listee/Classified Co. will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of use of the prescribed UL Mark, acceptance of the factory inspection, or payment of the Follow-Up Service fees which will incorporate such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking here: http://services.ul.com/fus-service-terms. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.

It is the responsibility of the Listee/Classified Co. to make sure that only the products meeting the aforementioned requirements bear the authorized Marks of UL LLC, or any authorized licensee of UL LLC.

This Follow-Up Service Procedure contains information for the use of the above Manufacturer(s) and representatives of UL and is not to be used for any other purpose. It is provided to the Manufacturer with the understanding that it will be returned upon request and is not to be copied in whole or in part.

This Follow-Up Service Procedure, and any subsequent revisions, is the property of UL and is not transferable. This Follow-Up Service Procedure contains confidential information for use only by the above named Manufacturer(s) and representatives of UL and is not to be used for any other purpose. It is provided to the Subscribers with the understanding that it is not to be copied, either wholly or in part unless specifically allowed, and that it will be returned to UL, upon request.

Capitalized terms used but not defined herein have the meanings set forth in the GSA and the applicable Service Terms or any other applicable UL service agreement.

UL shall not incur any obligation or liability for any loss, expense or damages, including incidental, consequential or punitive damages arising out of or in connection with the use or reliance upon this Follow-Up Service Procedure to anyone other than the above Manufacturer(s) as provided in the agreement between UL LLC or an authorized licensee of UL LLC, including UL Contracting Party, and the Manufacturer(s).

UL LLC has signed below solely in its capacity as the accredited entity to indicate that this Follow-Up Service Procedure is in compliance with the accreditation requirements.

Bruce A. Mahrenholz
Director
Conformity Assessment Programs (CPO)
UL LLC

LOCATION

1668996 (Party Site)
JABIL CIRCUIT DE MEXICO S DE R L DE C V
Technology Park # 420
Carretera Nogales Km 13.5
Av. Guadalupe # 225
45010 Zapopan
Jalisco MEXICO
Factory ID: JG
UL Contracting Party for above site is: UL GmbH

1764438 (Party Site)
EPI de Mexico S de RL de CV
Boulevard Independencia #1451 Int. 2
Parque Industrial Intermex Oriente
CP 32599 Juarez
Chihuahua MEXICO
Factory ID: V25
UL Contracting Party for above site is: UL GmbH

56081 (Party Site)
(432288-001) Crestron Electronics Inc
6 Volvo Dr
Rockleigh NJ 07647
Factory ID: None
UL Contracting Party for above site is: UL LLC

File		Volume	Page	Date:
E302724	Index	X5	1	28-Dec-18

Index

Product Type	Model/Type Reference	Report Reference #	Status
Power Amplifier	AMP-4600, AMP-2800	E302724-A6001-UL	

GENERIC INSPECTION INSTRUCTIONS

Product Category	Listing / Classification CCN	Component Recognition CCN **
Audio Video, Information and Communication Technology Equipment	AZOT, AZOT7	AZOT2, AZOT8
Power Supplies for Audio Video, Information and Communication Technology Equipment	QQJQ, QQJQ7	QQJQ2, QQJQ8
Information Technology Equipment Including Electrical Business Equipment	NWGQ, NWGQ7	NWGQ2, NWGQ8
Power Supplies for Information Technology Equipment Including Electrical Business Equipment	QQGQ, QQGQ7	QQGQ2, QQGQ8

** These instructions shall also be used for the indicated Component Recognition CCNs unless specifically exempted from the factory production-line tests as noted in each individual Test Report.

These instructions contain the UL LLC Follow-Up inspection requirements for manufacturing and production-line tests. These requirements are considered to be certification requirements related to Follow-Up inspection of equipment, as such, they are not included in the Bi-National Standard as deviations from IEC 60950 or IEC 60950-1.

These instructions consist of the following Parts:

Part	Description
AA	Instructions and Duties for UL Representative
AB	Instructions for Follow-Up Tests at UL
AC	Responsibilities and Requirements for Manufacturer
AD	General Terminology
AE	General Product Construction Requirements
AF	UL Certification Marks

PART AA

INSTRUCTIONS AND DUTIES FOR UL REPRESENTATIVE

AA1.0	**UL REPRESENTATIVE'S DUTIES**
AA1.1	The UL Representative's duties include, but are not limited to: A. Examining the construction of production intended to bear the UL Mark or Marking to determine compliance with the description of the product and any other requirements expressed in this Procedure. B. Where so specified in each Test Report, forwarding samples to UL for Follow-Up tests C. Where so specified by Part AC, inspecting the test records and facilities of the manufacturer to ensure that: 1. The proper number of samples are undergoing the required tests, and 2. The required tests are being performed correctly, and 3. The proper information is being recorded and is up-to-date, and 4. The instruments being used for the tests have been calibrated at the prescribed interval and are in good working order.

AA2.0	**PROCEDURE IN CASE OF NONCONFORMANCE**
AA2.1	Report to the manufacturer and UL LLC by means of a Variation Notice (VN) if: A. Variations in construction are found, or B. The manufacturer's method and/or frequency of testing is not as described, or C. The test records maintained by the manufacturer are not as described, or D. The manufacturer's inspection program is not being performed as described, or E. Nonconforming test results are witnessed during tests conducted specifically for the UL Representative.
AA2.2	Explain to the manufacturer that a VN is a means of communication with the manufacturer and applicant and forms a record of those items where nonconformance to the Procedure has been found. Reference is to be made to "Information for Manufacturer's Variation Notices" on the back of the VN.
AA2.3	When a product does not conform with the Procedure, require that the manufacturer: A. Remove any markings referencing UL from the product, or B. Suitably modify all products that do not comply with the Procedure, or C. Hold shipment pending further instructions from UL LLC Exception: Production may be temporarily accepted if it can be determined that the nonconformance does not present a conflict with the applicable UL requirements, and laboratory testing (other than Follow-Up testing) is not required to determine product compliance.

AA2.4	In the event of a disagreement between the manufacturer and the UL Representative as to whether a product is acceptable, the manufacturer shall hold production at the factory pending resolution of the variations. The manufacturer and applicant have the right to appeal the decision; and the UL Representative shall provide the name of the UL Engineer to whom the appeal is to be made. If the UL Engineer is not known the manufacturer is to be directed to contact the Client Advisor at the Reviewing Office. Should UL LLC grant temporary authorization for the continued use of the UL Mark, such temporary authorization shall only be for the time needed to review and/or process the Procedure revisions, or as otherwise specified to cover a particular lot or production run.

AA3.0	**INSTRUCTIONS FOR INSPECTION OF THE PRODUCT**
AA3.1	At each inspection, samples of current production and/or stock shall be examined for compliance with the applicable descriptions and requirements contained in this Procedure.

AA4.0	**INSTRUCTIONS FOR SAMPLE SELECTION**
AA4.1	Certain products contained in this Procedure employ plastic enclosures that may require Follow-Up testing when the material is not a Recognized Component Plastic (QMFZ2). Where indicated in each Test Report, samples shall be selected once per year.
AA4.2	Where Follow-Up tests are required, the number and type of samples to be selected and the tests to be conducted are indicated in each Test Report. Where different models shown use identical enclosures (material and dimensions), a single enclosure can be sent to represent all models. When several alternate materials are specified for particular models, only a sample of the enclosure material currently in use should be sent.
AA4.3	The selected samples shall be appropriately tagged to indicate materials, manufacturer and model/cat. no., and shall be forwarded to the appropriate Reviewing Office. Each enclosure sample should also be marked with the Procedure and Report Reference Number that the sample represents.

PART AB

INSTRUCTIONS FOR FOLLOW-UP TESTS AT UL

AB1.0	**GENERAL**
AB1.1	A Test Report may require Follow-Up Tests for specific products. The stated sample requirements and test specifics are based the information in AB2.0.
AB1.1	The samples forwarded by the UL Representative shall be subjected to the specified tests in accordance with the method and basis of acceptability noted in AB3.0.
AB1.2	All clause references are from the Standard for Safety of Information Technology Equipment, UL 60950, Third Edition and UL 60950-1, First Edition.

AB2.0	**SAMPLE REQUIREMENTS**		
	Test	Samples	Test Specifics
AB2.1	Impact	1 complete unit or 1 enclosure with supporting framework	Ball drop height = 1.3 m
AB2.2	Drop	1 complete unit	Unit drop height = 0.75 m or 1 m
AB2.3	Stress Relief	1 complete unit; or 1 enclosure with supporting framework	Oven temperature (°C)
AB2.4	3/4-Inch (19 mm) Flammability	3 enclosures or 3 sample parts with representative wall thickness and ventilation openings.	Oven temperature (°C)
AB2.5	5-Inch (127 mm) Flammability	3 enclosures or 3 sample parts with representative wall thickness and ventilation openings.	Oven temperature (°C)
AB2.6	Needle-Flame	3 enclosures or 3 sample parts with representative wall thickness and ventilation openings.	Oven temperature (°C)

AB3.0	**PERFORMANCE TESTS**		
	Test	Method (sub-clause)	Basis for Acceptability
AB3.1	Impact	4.2.5	4.2.1
AB3.2	Drop	4.2.6	4.2.1
AB3.3	Stress Relief	4.2.7	4.2.1
AB3.4	3/4-Inch (19 mm) Flammability	Annex A, A.2	Annex A, A.2
AB3.5	5-Inch (127 mm) Flammability	Annex A, A.1	Annex A, A.1
AB3.6	Needle-Flame	Annex A, A.2.7	Annex A, A.2.7

PART AC

RESPONSIBILITIES AND REQUIREMENTS FOR MANUFACTURER

AC1.0	**MANUFACTURER'S RESPONSIBILITIES (INCLUDING BUT NOT LIMITED TO)**
AC1.1	Control of UL Mark - Restrict the use of markings that reference UL (either directly or by use of the name, an abbreviation of it, or the UL symbol or Classification Mark, or indirectly by means of agreed-upon markings that are understood to indicate acceptance by UL) to those products that are found by the manufacturer's own inspection to comply with the Procedure description. Such restrictions apply to packaging, brochures or other means of advertising that reference UL. Use of such markings is further limited by the agreements that have been executed by the subscriber and UL.
AC1.2	Substitution of Non-Specified Plastic Materials - The product description may require the use of a Recognized Plastic with a minimum flammability rating. For these cases, before a plastic material may be used, current UL certification documentation must be checked to ensure that the plastic material has an acceptable flammability rating as specified at the thickness of use. Acceptable UL certification documentation includes: (a) the current edition of the Recognized Component Directory or Supplement; (b) the UL Online Certification Directory (http://www.ul.com/database). NOTE: The above does not apply to materials for which the specific manufacturer and type designation of the plastic is specified in the individual Test Reports (i.e. Enclosures).
AC1.3	Substitution of Non-Specified PWB's - Before a printed wiring board may be used, current UL certification documentation must be checked to ensure that the maximum solder temperature and dwell time is as indicated and that the printed wiring board has minimum flammability and operating temperature ratings as specified in the individual Test Reports or other specified requirements. Acceptable UL certification documentation includes: (a) the current edition of the Recognized Component Directory or Supplement; (b) the UL Online Certification Directory (http://www.ul.com/database).
AC1.4	Production-Line Tests - Conduct the tests detailed in Part AC2.
AC1.5	Test Equipment Calibration – Determine that the test equipment is functioning properly and have it calibrated at least annually, or whenever it has been subject to abuse (such as being dropped or struck with an object) or its accuracy is questionable. Calibration may be by the manufacturer or an outside laboratory. In either case, it shall be by comparison with a Standard that is traceable to the applicable U.S. or the appropriate country's National Standard. Certification of calibration shall be maintained by the manufacturer until the next succeeding certification, and shall be readily available for review by the UL Representative. A letter from an outside laboratory or from an off-site manufacturer's calibration lab stating that their lab Standards are directly traceable to their country's National Standard and outlining their traceability path is considered adequate proof of traceability. A tag or marking on the equipment alone is not to be considered as equivalent to certification, but may be used to reference the certification report.
AC1.6	Packaging - Ensure that there are no markings on the carton, package or contents that are, or could be construed to be, in conflict with or an extension of the uses covered in the instruction manual or Procedure.

AC1.7	Power Supply Cords – A. Non-Detachable Power Supply Cord - A non-detachable power supply cord must be provided if described in a Test Report. B. Detachable Power Supply Cord - A detachable power supply cord described in a Test Report may or may not be shipped with the unit(s). When a cord is provided, it should either: 1. Comply with the specific description in the Procedure, or, 2. Be provided for products for use outside of the USA and/or Canada. In this case, the manufacturer is to supply the UL Representative with information that allows the Representative to verify that the products are intended to be sold outside of the USA and/or Canada and that the cord is certified or similarly appropriate for use in the destination country.
AC1.8	User and Installation (Safety) Instructions provided with Bulk Shipped Equipment
AC1.8.1	Bulk shipments may be provided with installation instruction sets totaling less than the total number of products in the shipment provided, or none at all provided that the following conditions are met. A. Bulk Shipment to Distribution Center - Bulk shipments from a manufacturing facility covered by the Procedure describing the product to an off-site distribution center need not have the user/installation instructions provided with the shipment if appropriate safety instructions will be added to individual products at the distribution center before final redistribution to the consumer. It is the dual responsibility of the manufacturer and distribution center to have a system in place to insure that all instructions required by the Procedure are provided with the product before final distribution to the consumer, but this system will not be subject to review by UL Follow-Up Service. Example: A product shipped in a bulk lot to an overseas distribution center where appropriate installation instructions in the local language are added before final redistribution. B. Bulk Shipment to Single Destination Which Controls Installation of Equipment and Manages Distribution of Instructions - Bulk shipments from a manufacturing facility covered by the Procedure to a single destination, where the redistribution and installation of the product, including distribution of instructions, is under the control of the customer, may include just one set of use/installation instructions provided that the user/installation instructions (original or copies) are made available to the users of the equipment, as needed. Alternatively, user/installation instructions need not be provided with such a shipment if appropriate safety instructions will be sent separately to single destination that controls installation of the equipment. For such cases, it is the responsibility of the manufacturer to have a system in place to insure that all instructions required by the Procedure are provided to the consumer, but this system will not be subject to UL Follow-Up Service. Example: A product shipped in bulk lots to a corporate customer where the equipment will be redistributed and installed locally by the corporate customer, and copies of user/installation instructions are not needed for all users of the equipment. C. Bulk Shipment to Single Destination Which Does Not Control Installation - Bulk shipments from a manufacturing facility covered by the Procedure describing the product to a single destination, where redistribution and installation of the product is not controlled, should be provided with individual sets of use/installation instructions for each product, unless subjected to special consideration. Example: A product shipped in bulk lots to a wholesale or retail outlet where the installation of the equipment will not be under the control of the wholesaler or retailer.

AC1.8.2	Compliance with these guidelines will be determined through a review of the content of the equipment's installation instructions during the product investigation, and information supplied to the UL Inspection Center Representative during inspection visits. Other options that provide an equivalent level of safety or control may be considered based on the application.
AC1.9	Product Variations - In the event that a nonconformance to the Procedure is found, a Variation Notice (VN) will be issued. A VN is a means of communication with the applicant and manufacturer, and forms a record of those items where nonconformance to the Procedure has been found. The VN will indicate the specific model inspected and all other models with similar construction features, even when these models are not individually inspected. Unless directed otherwise by the UL Representative, when a product does not comply with the Procedure, the manufacturer shall either: A. Remove any markings referencing UL from the product, packaging, instructions, etc.; or B. Suitably modify all products that do not comply with the Procedure; or C. Hold shipment pending further instructions from UL LLC; or D. Act in accordance with special arrangements made with the Reviewing Office.
AC1.9.1	In the event of a disagreement between the manufacturer and the UL Representative as to whether or not a product is conforming, the manufacturer shall hold production at the factory pending resolution of the variations. The applicant or manufacturer has the right to appeal a decision with which he disagrees and should contact the appropriate UL Office to resolve any disagreements. Should UL LLC grant temporary authorization for the continued use of the UL Mark, such temporary authorization shall only be for the time needed to review and/or process the Procedure revisions, or as otherwise specified to cover a particular lot or production run.

AC2.0	**REQUIREMENTS FOR PRODUCTION-LINE TESTS**
AC2.1	The following Production-Line Tests shall be conducted on the products covered by this Procedure. During production, the test equipment shall be checked for proper operation at least once during each shift. When the tests are not performed concurrently, it is preferred that the Electric Strength (Dielectric Voltage-Withstand) Test be performed after the Earthing (Grounding) Continuity Test.
AC2.2	**Production-Line Earthing (Grounding) Continuity Test**
AC2.2.1	General
AC2.2.1.1	For Listed products: Except as may be noted under "Exceptions" in each Test Report, the manufacturer shall subject 100 percent of production of all of the following products to a routine Production-Line Earthing Continuity Test as described in section AC2.2.3. A. Products that are provided with a non-detachable earthing type power supply cord, or B. Products that are provided with an earthed type inlet which accepts a detachable power supply cord, or C. Products that are provided with an earthing type terminal block or field wiring (pigtail leads) for permanent connection to the branch circuit.
AC2.2.1.2	For Component Recognized products: When specifically noted in each Test Report, the manufacturer shall subject 100 percent of the specified models to a routine Production-Line Earthing Continuity Test as described in section AC2.2.3.
AC2.2.2	Test Equipment
AC2.2.2.1	Any suitable continuity-indicating device (such as an ohmmeter, a battery and buzzer combination, or the like) may be used to determine compliance with the Earthing Continuity Test requirements. Commercial earth continuity testers that pass a current through the earthing path may also be used to determine compliance with the same requirements.

AC2.2.3	Method
AC2.2.3.1	Continuity shall be determined between the earthing conductor of the attachment plug cap, and/or the designated main protective earthing point, and accessible dead-metal parts of the product, using the test equipment indicated above.
AC2.2.3.2	A single test is sufficient if the accessible metal selected is conductively connected by design to all other accessible metal.
AC2.2.4	Basis for Acceptability
AC2.2.4.1	There shall be earthing continuity between the parts specified.
AC2.2.5	In Cases of Non-conformance
AC2.2.5.1	Any unit that does not conform shall be segregated from conforming units until repaired or otherwise brought into compliance. Records of non-conforming test results shall be retained for six (6) months and shall be readily available for review by the UL Representative. The records shall include the model or catalog designation of the product, the date of production of the unit, the date the test was performed, test results and action taken on rejection.
AC2.3	**Production-Line Electric Strength (Dielectric Voltage-Withstand) Test**
AC2.3.1	General
AC2.3.1.1	For Listed products: Except as may be noted under "Exceptions" in each Test Report, the manufacturer shall subject 100 percent of production of all products to a routine Production-Line Electric Strength Test as described in section AC2.3.3.
AC2.3.1.2	For Component Recognized products: When specifically noted in each Test Report, the manufacturer shall subject 100 percent of the specified models to a routine Production-Line Electric Strength Test as described in section AC2.3.3.
AC2.3.2	Test Equipment
AC2.3.2.1	The test equipment shall include a means of indicating the test potential, an audible or visual indicator of electrical breakdown, and either a manually operated reset device to restore the equipment after electrical breakdown or an automatic feature that rejects any unacceptable unit. If an ac test potential is applied, the test equipment shall also include a transformer having an essentially sinusoidal output.
AC2.3.2.2	If the output of the test-equipment transformer is less than 500 volt-amperes, the equipment shall include a voltmeter in the output circuit to indicate the test potential directly.
AC2.3.2.3	If the output of the test-equipment transformer is 500 volt-amperes or more, the test potential may be indicated (1) by a voltmeter in the primary circuit or in a tertiary-winding circuit, (2) by a selector switch marked to indicate the test potential, or (3), in the case of equipment having a single test-potential output, by a marking in a readily visible location to indicate the test potential. When marking is used without an indicating voltmeter, the equipment shall include a positive means, such as an indicator lamp, to indicate that the manually operated reset switch has been reset following a dielectric breakdown.
AC2.3.2.4	Test equipment other than that described above may be used when it can be shown that UL has previously confirmed in writing that the equipment complies with the above requirements and is deemed suitable for use for this test.

AC2.3.3	Method
AC2.3.3.1	Each product shall withstand without electrical breakdown, as a routine production-line test, the application of an ac potential at a frequency within the range of 40-70 Hz or a dc potential between (a) the primary wiring, including connected components, and (b) accessible dead metal parts that are likely to become energized. For purposes of these instructions, primary wiring encompasses input wiring for connection to power systems associated with both ac mains and dc mains that exceeds 60 V dc. Note: See the Specific Inspection Criteria in each Test Report for details or special instructions for test locations, such as testing of enamel coating on signal transformers associated with TNV circuits per 2.3.2 and 6.2.1 of UL 60950/-1.
AC2.3.3.2	When there are capacitors across the insulation under test, it is recommended that dc test voltages be used.
AC2.3.3.3	The production-line test potential for paragraph AC2.3.3.1 shall be in accordance with Table AC1 for protectively earthed (Class I) products and Table AC2 for double insulated (Class II) products, as applicable. The full test potential is to be applied for 1 second. The manufacturer's test conditions may be higher than those shown in Tables AC1 and AC2when necessary to comply with other international product safety certifications.
AC2.3.3.4	The product may be in a heated or unheated condition for the test.
AC2.3.3.5	The test shall be conducted when the product is complete (fully assembled), and it is not intended that the product be unwired, modified, or disassembled for the test, unless otherwise permitted below: A. A part, such as a snap cover or a friction-fit knob, that would interfere with conducting the test need not be in place. B. The test may be conducted before final assembly if the test parameters represent that for the completed product. C. The test need not be performed using the power supply cord provided with the product. However, if the manufacturer's test method employs a test power supply cord, then the continuity of the test power supply cord conductive connections shall be checked once daily.
AC2.3.3.6	For the test, either a sufficient number of control devices are to be closed, or separate applications of the test potential are to be made, so that all parts of the primary circuit are tested.
AC2.3.3.7	During the test, the primary switch is to be in the on position, both sides of the primary circuit of the product are to be connected together and to one terminal of the test equipment, and the second test-equipment terminal is to be connected to accessible dead metal, except as permitted below: A. A product (resistive, high-impedance winding, or the like) having circuitry not subject to excessive secondary voltage buildup in case of electrical breakdown during the test may be tested (1) with a single-pole primary switch, if used, in the off position, or (2) with only one side of the primary circuit connected to the test equipment when the primary switch is in the on position or when a primary switch is not used. B. The primary switch is not required to be in the on position if the testing means applies full test potential between the primary wiring and dead metal parts with the switch not in the on position.
AC2.3.3.8	When authorized by the "Exceptions" included in each Test Report, solid-state components that might be damaged by a secondary effect (induced voltage surge, excessive heating, and the like) of the test may be short-circuited by means of a temporary electrical jumper or the test may be conducted without the component electrically connected, providing the wiring and terminal spacings are maintained. Transient voltage suppression devices other than capacitors connected from primary wiring to dead metal may also be disconnected during the test.

AC2.3.4	Basis for Acceptability
AC2.3.4.1	All products shall withstand the applied potential without an indication of electrical breakdown.
AC2.3.5	In Cases of Non-conformance
AC2.3.5.1	Any unit that does not conform when tested at the values as specified in Table AC1 or AC2 shall be segregated from conforming units until repaired or otherwise brought into compliance. Records of non-conforming test results shall be retained for six (6) months and shall be readily available for review by the UL Representative. The records shall include the model or catalog designation of the product, the date of production of the unit, the date the test was performed, test results and action taken on rejection.

TABLE AC1
ELECTRIC STRENGTH TEST CONDITIONS
FOR CLASS I (PROTECTIVELY EARTHED) EQUIPMENT

Appliance Voltage Rating	Test Potential (V rms)	Test Potential (V dc)	Time (seconds)
Rated less than or equal to 130 V rms (184 V dc)	1000	1400	1
Rated more than 130 V rms (184 V dc) and less than or equal to 600 V rms (849 V dc)	1500	2100	1

For products with special constructions and test conditions see “Exceptions” in each Test Report.

TABLE AC2
ELECTRIC STRENGTH TEST CONDITIONS
FOR CLASS II (DOUBLE INSULATED) EQUIPMENT

Appliance Voltage Rating	Test Potential (V rms)	Test Potential (V dc)	Time (seconds)
Rated less than or equal to 130 V rms (184 V dc)	2000	2800	1
Rated more than 130 V rms (184 V dc) and less than or equal to 600 V rms (849 V dc)	3000	4200	1

For products with special constructions and test conditions see “Exceptions” in each Test Report.

PART AD

GENERAL TERMINOLOGY

AD1.0	**ABBREVIATIONS / DEFINITIONS**	
AD1.1	Bounding Surface	The outer surface of the electrical enclosure, considered as though metal foil was pressed into contact with accessible surfaces of insulating material
AD1.2	Clearance	Shortest distance between two conductive parts or between a conductive part and the BOUNDING SURFACE of the equipment, measured through air
AD1.3	Creepage Distance	Shortest distance between two conductive parts, or between a conductive part and the BOUNDING SURFACE of the equipment, measured along the surface of the insulation
AD1.4	Extra Low Voltage (ELV)	A secondary circuit with voltages between any two conductors of the circuit, and between any one such conductor and earth, not exceeding 42.4 V peak, or 60 V dc, under normal operating conditions, which is separated from a HAZARDOUS VOLTAGE CIRCUIT by basic insulation, and which neither meets all of the requirements for an SELV circuit nor meets all of the requirements for a LIMITED CURRENT CIRCUIT.
AD1.5	Hazardous Energy Level (HAZ/EL)	An available power level of 240 VA or more having a duration of 60 s or more, or a stored energy level of 20 J or more, at a potential of 2 V or more.
AD1.6	Hazardous Voltage (HAZ/V)	A voltage exceeding 42.4 V peak, or 60 V dc, existing in a circuit that does not meet the requirements for either a LIMITED CURRENT CIRCUIT or a TNV CIRCUIT.
AD1.7	Limited Current Circuit (LCC)	A circuit which is so designed and protected, that, under both normal operating conditions and single fault conditions, the current which can be drawn is not hazardous
AD1.8	Limited Power Source (LPS)	A circuit which includes a transformer or battery, and which is either inherently limited to power levels considered not a risk of fire, or is not inherently limited and requires an over-current protective device to limit the source to power levels considered not a risk of fire
AD1.9	Primary (PRI)	A circuit that is directly connected to the ac mains supply. It includes, for example, the means for connection to the ac mains supply, the primary windings of transformers, motors and other loading devices.
AD1.10	Safety Extra Low Voltage (SELV)	A SECONDARY CIRCUIT which is so designated and protected that under normal operating conditions and single fault conditions, its' voltages do not exceed a safe value, generally 42.2 V peak or 60 V dc.
AD1.11	Secondary (SEC)	A circuit that has no direct connection to a PRIMARY CIRCUIT and derives its power from a transformer, converter or equivalent isolation device, or from a battery.
AD1.12	TNV Circuit	A telecommunications network voltage circuit, which is in the equipment and to which the accessible area of contact is limited, and that is so designed and protected that, under normal operating conditions and single fault conditions, the voltages do not exceed specified limit values based upon the type of TNV circuit.

PART AE

GENERAL PRODUCT CONSTRUCTION REQUIREMENTS

AE1.0	**CONSTRUCTION DETAILS**
AE1.1	Unless otherwise described or supplemented in individual Test Reports, the requirements specified in Table AE1 apply to all equipment included in this Procedure
AE1.2	All clause references are from the Standard for Safety of Information Technology Equipment, UL 60950, Third Edition and UL 60950-1, First Edition.

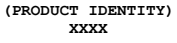
TABLE AE1
CONSTRUCTION DETAILS

Clause	Clause Title	Clause Specifics
		None specified

PART AF

UL CERTIFICATION MARK

Product Category:	Audio/video, Information and Communication Technology Equipment
Product Category CCN:	AZOT

AF1.1	The Test Report covering each product must be consulted to determine which Listing Marks are authorized for use in conjunction with that product.
AF1.1.1	The following Listing Mark is authorized for use on products that are Listed **only** to the requirements for the United States: 
AF1.1.2	Either of the following Listing Marks is authorized for use on products that are Listed to the requirements of **both** the United States and Canada:  
AF1.2	The Listing Mark consists of four elements that are placed in close proximity to each other and shall appear on Listed products only.
AF1.2.1	Element 1 - UL Symbol. There is no required minimum height for the UL Symbol, as long as it is legible. The minimum height of the registered trademark symbol ® shall be 3/64 of an inch. When the overall diameter of the UL Symbol is less than 3/8 of an inch, the trademark symbol may be omitted if it is not legible to the naked eye. Information on downloading electronic versions or receiving camera-ready artwork of the UL Symbols may be obtained at www.ul.com
AF1.2.2	Element 2 - The word “LISTED”
AF1.2.3	Element 3 - A product identity
AF1.2.3.1	The product identity is: “AV Equipment,” “Copier,” “Musical Instrument,” “Paper Shredder,” “Personal Computer,” ”, or another appropriate name as shown in the individual Test Reports.
AF1.2.3.2	The product identity may be omitted if the Listing Mark is directly and permanently applied to the product by stamping, molding, ink-stamping, silk screening or similar process. The product identity may appear elsewhere on the product if the other three elements are part of the nameplate that includes the rating or the catalog or model designation.
AF1.2.3.3	Where Rebuilt products are authorized in individual Test Reports, the product identity for such products shall be preceded by "REBUILT" or "REMANUFACTURED", as appropriate.
AF1.2.4	Element 4 – A control number represented above by XXXX is to be replaced with the Listee’s file number.
AF1.3	A separable Listing Mark (not part of a nameplate and in the form of decals, stickers or labels) must include the four elements.
AF1.4	The manufacturer may reproduce the Listing Mark or obtain it from a UL authorized supplier.

PART AF

UL CERTIFICATION MARK

Product Category:	Audio/video, Information and Communication Technology Equipment
Product Category CCN:	AZOT7

AF1.1	The Test Report covering each product must be consulted to determine which Listing Marks are authorized for use in conjunction with that product.
AF1.1.1	The following Listing Mark is authorized for use on products that are Listed **only** to the requirements for Canada:  (PRODUCT IDENTITY) XXXX
AF1.1.2	Either of the following Listing Marks is authorized for use on products that are Listed to the requirements of **both** the United States and Canada:  (PRODUCT IDENTITY) XXXX (PRODUCT IDENTITY) XXXX
AF1.2	The Listing Mark consists of four elements that are placed in close proximity to each other and shall appear on Listed products only.
AF1.2.1	Element 1 - UL Symbol. There is no required minimum height for the UL Symbol, as long as it is legible. The minimum height of the registered trademark symbol ® shall be 3/64 of an inch. When the overall diameter of the UL Symbol is less than 3/8 of an inch, the trademark symbol may be omitted if it is not legible to the naked eye. Information on downloading electronic versions or receiving camera-ready artwork of the UL Symbols may be obtained at www.ul.com
AF1.2.2	Element 2 - The word “LISTED”
AF1.2.3	Element 3 - A product identity
AF1.2.3.1	The product identity is: “AV Equipment,” “Copier,” “Musical Instrument,” “Paper Shredder,” “Personal Computer,”, or another appropriate name as shown in the individual Test Reports.
AF1.2.3.2	The product identity may be omitted if the Listing Mark is directly and permanently applied to the product by stamping, molding, ink-stamping, silk screening or similar process. The product identity may appear elsewhere on the product if the other three elements are part of the nameplate that includes the rating or the catalog or model designation.
AF1.2.3.3	Where Rebuilt products are authorized in individual Test Reports, the product identity for such products shall be preceded by "REBUILT" or "REMANUFACTURED", as appropriate.
AF1.2.4	Element 4 – A control number represented above by XXXX is to be replaced with the Listee’s file number.
AF1.3	A separable Listing Mark (not part of a nameplate and in the form of decals, stickers or labels) must include the four elements.
AF1.4	The manufacturer may reproduce the Listing Mark or obtain it from a UL authorized supplier.

CERTIFICATE OF COMPLIANCE

Certificate Number	20190108-E302724
Report Reference	E302724-A6001-UL
Issue Date	2019-JANUARY-08
Issued to:	CRESTRON ELECTRONICS INC 15 VOLVO DR ROCKLEIGH NJ 07647-2507
This certificate confirms that representative samples of	AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT Power Amplifier, AMP-4600, AMP-2800 Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 62368-1 & CAN/CSA C22.2 No. 62368-1-14, Audio/video, information and communication technology equipment Part 1: Safety requirements
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 2nd Ed, 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1-14, 2nd Ed (Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Listing
CCN:	AZOT, AZOT7 (Audio/video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	Power Amplifier
Model:	AMP-4600, AMP-2800
Rating:	100-240 VAC, 4-2 A, 50/60 Hz
Applicant Name and Address:	CRESTRON ELECTRONICS INC 15 VOLVO DR ROCKLEIGH NJ 07647-2507 UNITED STATES

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared By:	Hong Ung / Senior Project Engineer	Reviewed By:	Michael Lockhart / Reviewer

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

A. Authorization - The Authorization page may include additional Factory Identification Code markings.

B. Generic Inspection Instructions -

i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.

ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.

iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The AMP-4600, and AMP-2800 are multi-channel audio power amplifiers. All models are powered by an internal power supply evaluated as part of this investigation.

Model Differences

AMP-4600 is a 4-channel audio power amplifier which can provide up to 600W per channel into 8 ohm or 4 ohm “Lo-Z” loads, as well as produce 70VRMS out at 600W per channel in “70V/Hi-Z” mode or 89VRMS out at 600W in “100V/Hi-Z” mode

AMP-2800 is a 2-channel audio power amplifier which can provide up to 800W per channel into 8 ohm or 4 ohm “Lo-Z” loads, as well as produce 70VRMS out at 800W per channel in “70V/Hi-Z” mode or 89VRMS out at 800Win “100V/Hi-Z” mode.

Test Item Particulars

Classification of use by	Ordinary person Children likely to be present
Supply Connection	AC Mains
Supply % Tolerance	+10%/-10%
Supply Connection – Type	pluggable equipment type A - appliance coupler
Considered current rating of protective device as part of building or equipment installation	20 A; building;
Equipment mobility	rack-mounting
Over voltage category (OVC)	OVC II
Class of equipment	Class I
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer’s specified maximum operating ambient	40 °C
IP protection class	IPX0
Power Systems	TN
Altitude during operation (m)	2000 m or less
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	6.4 kg

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 40 °C
- The product is intended for use on the following power systems : TN, IT, TT
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply values : +10%/-10%
- The equipment disconnect device is considered to be : Appliance inlet
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS) : USB and Ethernet Ports.
- The product was investigated to the following additional standard : EN 62368-1:2014 + A11:2017

Additional Information

Marking plate represents all models.

Additional Standards

The product fulfills the requirements of: EN 62368-1:2014 + A11:2017

Markings and Instructions

Clause Title	Marking or Instruction Details
Audio signal terminals at ES2	Insulated terminals marked with symbol ⚠ (ISO 7000-0434a) or symbol ⚠ (ISO 7000-0434b)
Equipment identification marking – Manufacturer identification	Listees or Recognized companys name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)"

Special Instructions to UL Representative

For transformer test - When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in Production-Line Testing Requirements be conducted at the component manufacturer.

BD1.0	TABLE: Production-Line Testing Requirements					
BD1.1	**Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.**					
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
All	Unit	N/A	Primary to Chassis	1500	2100	1
BD1.2	**Earthing Continuity Test Exemptions – This test is not required for the following models:**					
	None					
BD1.3	**Electric Strength Test Exemptions – This test is not required for the following models:**					
	None					
BD1.4	**Electric Strength Test Component Exemptions – The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test.**					
	N/A					

BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics

4.1.2	**TABLE: List of critical components**					**Pass**
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Product Category CCN(s)	Mark(s) of conformity	Supplement ID
Enclosure	Interchangeable	Interchangeable	Metal. Overall measures 44 mm (H) X 436 mm (W) X 371 mm (D). 0.8 mm nominal thickness. (Dimensions do not include mounting extensions). Numerous side openings each measuring 2.8mm in diameter. See Enclosure 07-05 for build specifications.	-	-	
Inlet Filter (contains certified 2-pole switch)	Schaffner	FS34921S-10-07	Rated 250 V, 50/60 Hz, 10 A, 40°C	FOKY2	UR	
Supplementary Protector	Schurter	T9-611P-10A (4404.0004)	Rated 250 V, 10 A. Pushbutton Reset, secured by snap-fit.	QVNU2	UL(E71572)	
Wiring, internal primary	Interchangeable	Interchangeable	Marked VW-1; min 300 V, 80 ºC, 18 AWG, 0.82 mm²	AVLV2	UR	
Primary Wiring Sleeving	Alpha Wire	PVC-105-8-Black	Rated min. 300 V, 105 °C	YDPU2	UR	
Earthing	Interchangeable	Interchangeable	Green/yellow earthing conductor, min 18 AWG, mechanically secured to inlet. Other end secured to chassis via min 3mm stud, ring terminal and lock nut.	-	-	

Power Supply Cord	Interchangeable	Interchangeable	Type SJT, 18 AWG, 0.82 mm², 300 V, 75 ºC, max 4.5 m long; One end with NEMA 5-15P. Other end (with appliance coupler) (connected to unit)	ELBZ or ZJCZ	UL or UR	
Power Supply Board(SE07686)	--	--	--	--	--	
Capacitor (C18-C20, C41)	Panasonic	ECQ-U2A222ML	Type X2/Y2; Rated 275 V, 0.0022 µF	FOWX2	UR	
Capacitor (C25, C34)	Panasonic	ECQU2A105ML	Type X2; Rated 275 V, 1.0 µF	FOWX2	UR	
Line Filter (T1)	Wurth Elektronik	7448040707	Bobbin rated V-0, 130°C	-	-	
Varistor (RV1)	Epcos (Zhuhai FTZ) Co Ltd	SIOV-S14K275E2K1, Part Number B72214P2271K101	Rated 275 V	VZCA2	UR	
Varistor (RV1) - Alternate	Littelfuse	V275LA20AP	Rated 275 V	VZCA2	UR	
Varistor (RV1) - Alternate	TE Connectivity	ROV14H431K	Rated 275 V	VZCA2	UR	
Varistor Fiberglass Tubing	Alpha Wire	PIF-200-2	Rated 600 V, VW-1, 200°C	UZFT2	UR	
Optocoupler (U5,U18)	Everlight	EL1017 (TA)-VG	Single Protection Optical Isolator	QQQX2	UR	

Transformer (T3, T14-T16)	Minntronix	4816444R	Minimum Class A or Class B with UL Insulation System designated as SR-130. Open-type construction. Core: Ferrite. Pri – Sec. isolation provided by Triple Insulated Wire. See Enclosure 07-01 for build specifications.	-	-	
Transformer (T3, T14-T16) - Alternate	CET Technology	CT-8303-1	Class B (UL Insulation System designated as B5) Open-type construction. Core: Ferrite. Pri – Sec. isolation provided by Triple Insulated Wire. See Enclosure 07-06 for build specifications.	-	-	
Insulation sheet	ITW Formex	Formex GK-17	Flame retardant polypropylene insulation, .43 + .08/-.03mm thickness. Rated V-0. Located under lid and power supply.	QMFZ2	UR	
Insulation sheet – Alternate	Interchangeable	Interchangeable	Rated V-0. Located under lid and power supply.	QMFZ2	UR	
PWB	Interchangeable	Interchangeable	Min. V-0, 105°C	ZPMV2	UR	
Power Supply Board Connectors	Interchangeable	Interchangeable	Min. V-2	ECBT2	UR	
SE07683 Processor Board	--	--	--	--	--	

Fuse (F3) – (non-operator replaceable)	LITTELFUSE WICKMANN WERKE	46212000000	Rated 2A, 250VAC, Time Lag, 10.5x4.5mm, Surface Mount	JDYX2	UL(E67006)	
Transformer (T3)	Minntronix	4813910R (Crestron p/n 2040578)	Class B (UL Insulation System CIS.04) Open-type construction. Core: Ferrite. Pri – Sec. isolation provided by Triple Insulated Wire. See Enclosure 07-03 for build specifications.	-	-	
Transformer (T3) - Alternate	XFMRS	2040578(Crestron drawing 275253)	Class B (UL Insulation System X130) Open-type construction. Core: Ferrite. Pri – Sec. isolation provided by Triple Insulated Wire. See Enclosure 07-07 for build specifications.	-	-	
Transformer (T3) - Alternate	CET Technology	CT-7629 (Crestron drawing 275253)	Class B (UL Insulation System designated as B1) Open-type construction. Core: Ferrite. Pri – Sec. isolation provided by Triple Insulated Wire. See Enclosure 07-08 for build specifications.	-	-	
Capacitor (C135)	Panasonic	ECQ-U2A222ML	Type X2/Y2; Rated 275 V, 0.0022 µF,	FOWX2	UR	
Capacitor (C172)	United Chemi Con	EKXG351ELL101MM25s	Electrolytic Capacitor; Rated 350V, 100 µF, 105C	-	-	

Capacitor (C172) – alternate	NICHICON	UCS2V101MHD1TN	Electrolytic Capacitor; Rated 350V, 100 µF, 105C	-	-	
Optocoupler (U44)	Vishay	TCLT1007	Double protection optical isolators, provides 5000 Vac isolation	FPQU2	UR(E76222)	
Fans (3 Provided)	Sunon Group	HA40201V4-Q04U-S99	12 VDC, 0.58 W	GPWV2	UR	
Connectors	Interchangeable	Interchangeable	Min. V-2	ECBT2	UR	
PWB	Interchangeable	Interchangeable	Min. V-1, 105 ºC	ZPMV2	UR	
SE07685 - Amp Board	--	--	--	--	--	
Transformer (T1) – Gate Drive	Pulse Electronics Corp.	PA2517NL	Class A Open-type construction. Core: Ferrite. Pri – Sec. isolation provided by Triple Insulated Wire. See Enclosure 07-04 and 07-09 for build specifications	-	-	
Optocoupler (U16)	TOSHIBA ELECTRONIC DEVICES & STORAGE CORPORATION	TLP291	Double protection optical isolators, provides 3750 Vac isolation	FPQU2	UR(E67349)	
Optocoupler (U16) – alternate	Vishay	Vos617A-3x001T	Double protection optical isolators, provides 3750 Vac isolation	FPQU2	UR(E52744)	
Speaker Output Relays (K1,K5, K9,K13 for model AMP-4600 and K1, K9 for model AMP-2800)	AMERICAN ZETTLER INC.	AZ2150-1A-15DE-F	RELAY,15VDC, 0.9W COIL, 30A@277VAC. SPST, SEALED, CLASS F, THRU HOLE.	NLDX2	UR(E44211)	

Speaker Output Relays (K1,K5, K9,K13 for model AMP-4600 and K1, K9 for model AMP-2800) - Alternate	XIAMEN HONGFA ELECTROACOUSTIC CO LTD	HF2150-1A-15DE-F	RELAY,15VDC, 0.9W COIL, 30A@277VAC. SPST, SEALED, CLASS F, THRU HOLE.	NLDX2	UR(E134517)	
Connectors	Interchangeable	Interchangeable	Min. V-2	ECBT2	UR	
PWB	Interchangeable	Interchangeable	Min. V-1, 105 ºC	ZPMV2	UR	
Label	Avery Dennison Corp Fasson Roll North America Div	2M MAT CH PET TC/S-333	Polyester facestock, coated with industrial grade clear permanent acrylic adhesive rated for 149°C.	PGJI2	UR	
Label - Alternate	Interchangeable	Interchangeable	Rated 80°C min. for surface to which it is applied.	PGJI2 or PGDQ2	UR	

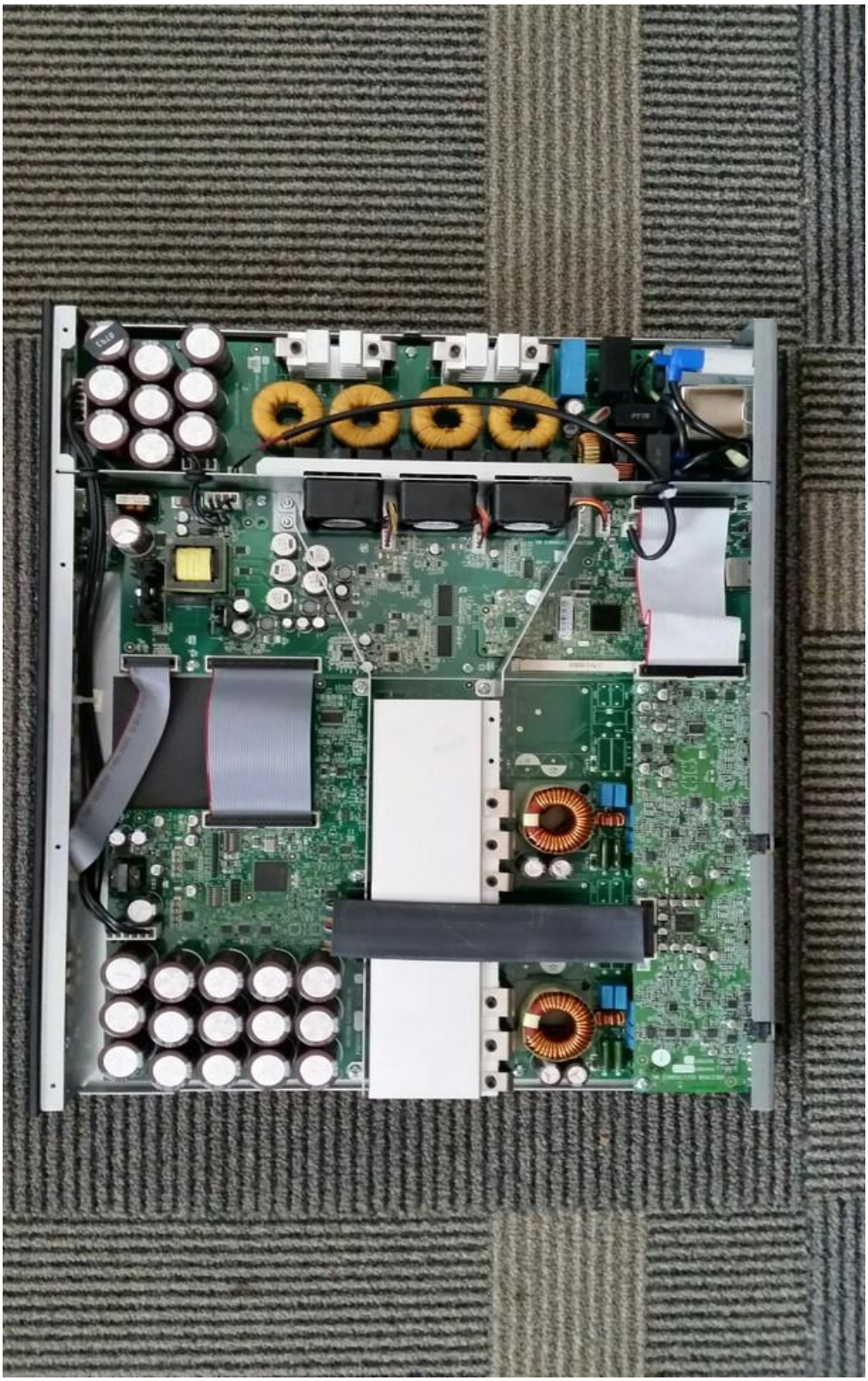
Enclosures

Type	Supplement Id	Description
Photographs	03-01	AMP-2800 Front View
Photographs	03-02	AMP-2800 Top/Rear View
Photographs	03-03	AMP-2800 Top/Left View
Photographs	03-04	AMP-2800 Top/Right View
Photographs	03-05	AMP-2800 Internal View
Photographs	03-06	AMP-2800 AC Inlet View
Photographs	03-07	AMP-2800 Speaker Output Connector View
Photographs	03-08	AMP-2800 Bottom View
Photographs	03-09	AMP-4600 Top/Front View
Photographs	03-10	AMP-4600 Top/Rear View
Photographs	03-11	AMP-4600 Top/Left View
Photographs	03-12	AMP-4600 Top/Right View
Photographs	03-13	AMP-4600 Internal View
Photographs	03-14	AMP-4600 Speaker Output Connector View
Manuals	06-01	Safety Instructions
Miscellaneous	07-01	Transformer (T3, T14-T16), Minitronix, 4816444R
Miscellaneous	07-03	Transformer (T3) - Minntronix, 4813910R (Crestron p/n 2040578)
Miscellaneous	07-04	Transformer (T1) – Gate Drive, Pulse Electronics Corp., PA2517NL - BOM
Miscellaneous	07-05	Side opening drawings
Miscellaneous	07-06	Transformer (T3, T14-T16),CET Tech, model CT-8303-1
Miscellaneous	07-07	Transformer (T3) - XFMRS 2040578(Crestron drawing 275253)
Miscellaneous	07-08	Transformer (T3) - CET Technology, model CT-7629 (Crestron drawing 275253)
Miscellaneous	07-09	Transformer (T1) – Gate Drive, Pulse Electronics Corp., PA2517NL - specifications


CRESTRON
COMPUTER
PWR
RESET
STATUS
FAULT
CURRENT
DC
THERM
VU
CLIP
AMP-2800


LINE INPUTS
CRESTRON
LAN
SETUP


AMP-2800



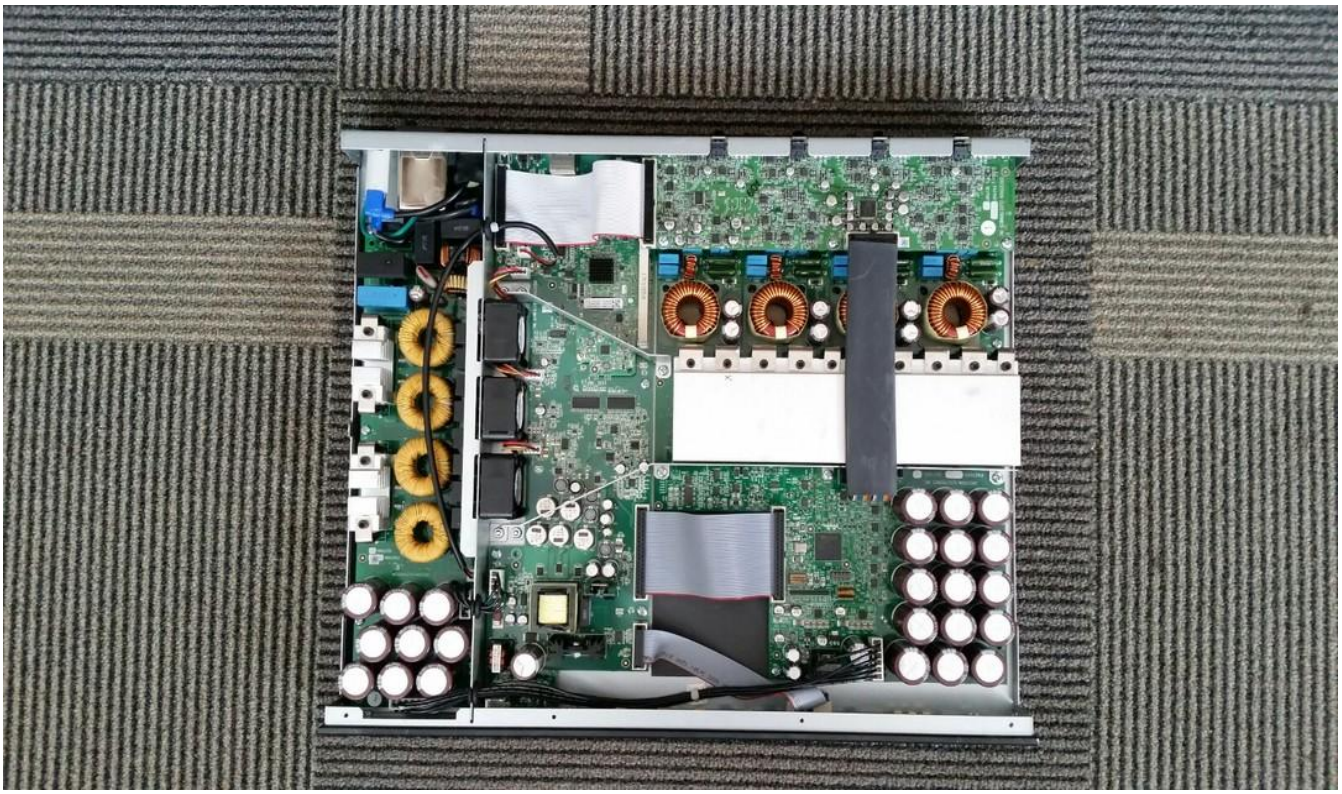

MAC ID LABEL
CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
AVIS RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR
UL LABEL
SERIAL #
100-240 VAC
4-2 A
50/60 Hz
10A
G
ESTRON
LAN
SETUP


+ − G
1
LINE INPUTS
+ − G
2
BRIDGE CH
ODD EVEN
+ − + −
+ −
8 Ω ONLY
+ −
1
危险电压
+ −
2
SPEAKER OUTPUTS ALL MODES 800W CLASS 2 WIRING


CRESTRON
AMP-4600


LINE INPUTS
SPEAKER OUTPUTS
CRESTRON
LAN
SETUP


4000 SERIES AMPLIFIER
CRESTRON




+ – G
1
+ – G
2
LINE INPUTS
+ – G
3
+ – G
4
BRIDGE CH
ODD EVEN
+ –
危险电压
SPEAKER OUTPUTS
ALL MODES 600W
CLASS 2 WIRING
8 Ω ONLY

Crestron
Safety Instructions

This document was prepared and written by the Technical Documentation department at:

Crestron Electronics, Inc.
15 Volvo Drive
Rockleigh, NJ 07647
1-888-CRESTRON

Contents

English

Important Safety Instructions

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the equipment. When a cart is used, use caution when moving the cart/equipment combination to avoid injury from tipping over.

- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Disconnect power prior to connecting or disconnecting equipment.
- Do not install in direct sunlight.
- The apparatus must be installed in a way that the power cord can be removed either from the wall outlet or from the device itself in order to disconnect the mains power.
- Prevent foreign objects from entering the device.

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE. THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING. OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THE APPARATUS.

WARNING:

TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. THERE ARE NO USER SERVICEABLE PARTS INSIDE. ONLY QUALIFIED SERVICE PERSONNEL SHOULD PERFORM SERVICE.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance

WARNING:

THIS IS AN APPARATUS WITH CLASS I CONSTRUCTION. IT SHALL BE CONNECTED TO AN ELECTRICAL OUTLET WITH AN EARTHING GROUND TERMINAL.

IMPORTANT:

This device can be used with Class 2 output wiring.

中文，简体 (Chinese, Simple)

主要安全措施

- 请完整阅读以下的指示。
- 请保留好以下的指示。
- 请留意所有的警告内容。
- 请遵守以下的指示。
- 请勿在有水的区域使用本设备。
- 只能使用干布擦拭本设备。
- 请勿堵塞通风装置。必须按照制造商的指示安装本设备。
- 请勿在任何散热装置，例如：辐射体、集热器、炉子或其他产热装置旁安装此设备。
- 请在极化插头或接地插头的安全范围内操作。极化插头有2个触头，其中一个比较宽。接地插头有2个触头以及一个接地触头。其中较宽的触头和接地触头起到了保护插头的作用。如果所提供的插头与现有的插座无法匹配，须请电工更换新的插座。
- 请不要踩电源线或故意挤压插头、插座以及其与设备的连接处。
- 只能使用制造商指定的附件。
- 只能使用由制造商指定或与本设备一起出售之推车、座架、三脚架、托架、或桌子。在移动设备与推车的整体组合时，务必十分小心，避免在翻倒时受伤。

- 在雷雨或长时间不使用本设备时，请断开电源
- 请向专业的产品维护人员咨询。当设备损坏时，如：电源线或插头损坏，有液体漏出或者有物体掉进设备，设备淋雨或受潮，运行不正常或者不慎落在地上，应该立即修理受损处。
- 在连接或断开设备时，请首先断开电源。
- 请勿安装在直射阳光下。
- 为了能够完全断开总电源，请保证电源线既可以从墙上插座处，又可以从设备上拔出。
- 请勿使外来物品进入设备。

警告

为了降低火灾或电击的发生率，请不要让本设备淋雨或受潮。请勿将本设备置于可能会滴到水滴或者飞溅液体的地方，也勿将盛满水的容器，例如花瓶，放在本设备上。

警告

为了防止电击，请勿移开盖子。用户一定要在专业人员的指导下操作本设备。只有专业的维修人员才能够维修此设备。

一个等边三角形中带有箭头的闪电标志，是要提醒使用者，在产品包装内可能存在未绝缘的危险电压，此种大小的电压可能会对人体产生电击。

一个等边三角形中的惊叹号，是要提醒使用者在产品说明书上有重要的操作步骤或维护（维修）指示说明。

警告

本设备为I类结构电器，务必连接到带有保护接地的电源插座。

重要说明

此设备可以与2级输出电缆连接

中文，繁體 (Chinese, Traditional)

主要安全措施

- 請完整閱讀以下的指示。
- 請保留好以下的指示。
- 請留意所有的警告內容。
- 請遵守以下的指示。
- 請勿在有水的區域使用本設備。
- 只能使用乾布擦拭本設備。
- 請勿堵塞通風裝置。必須按照製造商的指示安裝本設備。
- 請勿在任何散熱裝置，例如：輻射體、集熱器、爐子或其他產熱裝置(包括擴音器)旁安裝此設備。
- 請在極化插頭或接地插頭的安全範圍內操作。極化插頭有2個觸頭，其中一個比較寬。接地插頭有2個觸頭以及一個接地觸頭。其中較寬的觸頭和接地觸頭起到了保護插頭的作用。如果所提供的插頭與現有的插座無法匹配，須請電工更換新的插座。
- 請不要踩電源線或故意擠壓插頭、插座以及其與設備的連接處。
- 只能使用製造商指定的附件。
- 只能使用製造商指定或與產品隨售的推車、三腳架、托架或平台。如使用推車，在移動推車/設備時務必小心，避免翻覆導致設備損害。

- 在雷雨或長時間不使用本設備時，請關閉電源
- 請向專業的產品維護人員諮詢。當設備損壞時，如：電源線或插頭損壞，有液體漏出或者有物體掉進設備，設備淋雨或受潮，運作不正常或者不慎落在地上，應該立即修理受損處。
- 在連接或關閉設備時，請先關閉電源。
- 請勿將本設備安裝在陽光可以直射到的地方。
- 為了能夠完全關閉總電源，請確定電源可從牆上插座或設備上移除。
- 請避免外来杂物掉进設備。

警告

為了降低火災或電擊的發生率，請不要讓本設備淋雨或受潮。請勿將本設備置於可能會滴到水滴或者飛濺液體的地方，也勿將盛滿水的容器，例如花瓶，放在本設備上。

警告

為了防止電擊，請勿移開蓋子。用戶一定要在專業人員的指導下操作本設備。只有專業的維修人員才能夠維修此設備。

一個等邊三角形中帶有箭頭的閃電標誌，是要提醒使用者，在產品包裝內可能存在未絕緣的危險電壓，此種大小的電壓可能會對人體產生電擊。

一個等邊三角形中的驚嘆號，是要提醒使用者在產品說明書上有重要的操作步驟或維護（維修）指示說明。

警告

這是歸於建築物一類的設備。此設備的連接插座必須有一個接地端。

重要說明

此設備通可以用於第二級輸出接線

Deutsche (German)

Wichtige Sicherheitsanweisungen

- Lesen Sie sich diese Anleitung sorgfältig durch.
- Bewahren Sie die Anleitung auf.
- Beachten Sie alle Warnhinweise.
- Befolgen Sie alle Anweisungen.
- Verwenden Sie dieses Gerät nicht Wassernähe.
- Reinigen Sie es nur mit einem trockenen Tuch.
- Blockieren Sie keine Lüftungsöffnungen. Stellen Sie das Gerät gemäß den Herstelleranweisungen auf.
- Stellen Sie es nicht in der Nähe von Wärmequellen auf, die Wärme abstrahlen, wie z. B. Heizkörpern, Öfen oder anderen Geräten (einschließlich Verstärkern).
- Versuchen Sie nicht, das Sicherheitsmerkmal des gepolten oder geerdeten Steckers zu umgehen. Ein gepolter Stecker hat zwei Flachkontakte, von denen einer breiter ist als der andere. Ein geerdeter Stecker hat zwei Flachkontakte und einen dritten Erdungskontakt (Schutzleiter). Der breitere Flachkontakt oder der Schutzleiter dienen Ihrer Sicherheit. Wenn der im Lieferumfang enthaltene Stecker nicht in Ihre Steckdose passt, wenden Sie sich zur Entfernung der veralteten Steckdose an einen Elektriker.
- Schützen Sie das Netzkabel vor dem Zusammendrücken (durch Drauftreten) und Abklemmen, besonders an Steckern, Steckdosen und an der Stelle, an der das Kabel aus dem Gerät austritt.
- Verwenden Sie stets nur vom Hersteller angegebene(s) Zusätze/Zubehör.
- Wenn Sie das Gerät auf einem Wagen, Dreibein, Halterung oder Tisch benutzen möchten, so verwenden Sie nut die vom Hersteller angegeben Zusatzgeräte oder die, die mit dem Gerät verkauft worden sind. Wenn ein Wagen benutzt wird, seien Sie vorsichtig, wenn Sie den Wagen/die Apparatekombination bewegen, um Verletzungen durch Umkippen zu vermeiden.

- Ziehen Sie den Netzstecker des Geräts während eines Gewitters oder wenn das Gerät über einen längeren Zeitraum nicht verwendet werden soll ab.
- Überlassen Sie alle Wartungs- und Reparaturarbeiten einem qualifizierten Kundendienst. Wartungsmaßnahmen sind erforderlich, wenn das Gerät beschädigt wurde, wenn beispielsweise das Netzkabel oder der Netzstecker beschädigt sind, Flüssigkeit in das Gerät verschüttet wurde oder Gegenstände in das Gerät gefallen sind, das Gerät Regen oder Feuchtigkeit ausgesetzt war, sich nicht normal öffnen lässt oder fallen gelassen wurde.
- Ziehen Sie den Netzstecker vor dem Anschluss und dem Abziehen von Geräten ab.
- Stellen Sie das Gerät nicht in direkter Sonneneinstrahlung auf.
- Das Gerät muss so aufgestellt werden, dass sich das Netzkabel entweder aus der Wandsteckdose oder am Gerät selber abziehen lässt, um somit die Netzstromversorgung zu unterbrechen.
- Verhindern Sie, dass Fremdkörper in das Gerät eindringen.

WARNUNG:

UM DIE GEFAHR EINES BRANDS ODER EINES ELEKTRISCHEN SCHLAGS ZU VERRINGERN, DIESES GERÄT NICHT REGEN ODER FEUCHTIGKEIT AUSSETZEN. DAS GERÄT DARF NICHT MIT TROPFENDEN ODER SPRITZENDEN FLÜSSIGKEITEN IN KONTAKT KOMMEN. MIT FLÜSSIGKEIT GEFÜLLTE BEHÄLTER, WIE BEISPIELSWEISE VASEN, DÜRFEN NICHT AUF DAS GERÄT GESTELLT WERDEN.

WARNUNG:

UM EINEN ELEKTRISCHEN SCHLAG ZU VERMEIDEN, DIE ABDECKUNG NICHT ABNEHMEN. DAS GERÄT ENTHÄLT KEINE WARTUNGSFÄHIGEN TEILE. WARTUNGSARBEITEN SIND AUSSCHLIESSLICH VON QUALIFIZIERTEN FACHKRÄFTEN DURCHZUFÜHREN.

Der Blitz mit dem Pfeilspitzensymbol in einem gleichschenkligen Deck soll den Benutzer vor einer unisolierten „gefährlichen Spannung“ im Gehäuse des Produkts warnen, die ausreichend hoch sein kann, um beim Menschen zu einem elektrischen Schlag zu führen.

Das Ausrufezeichen in einem gleichschenkligen Dreieck soll den Benutzer auf wichtige Gebrauchs- und Wartungsanweisungen (Serviceanweisungen) in den Begleitunterlagen des Geräts hinweisen.

WARNUNG:

DIES IST EINE GERÄTEAUSFÜHRUNG DER KLASSE 1. DAS GERÄT MUSS AN EINE SCHUTZKONTAKTSTECKDOSE ANGESCHLOSSEN WERDEN.

WICHTIG:

Dieses Gerät hat die Schutzklasse 2.

Espanol (Spanish)

Instrucciones importantes de seguridad

- Lea estas instrucciones.
- Conserve estas instrucciones.
- Tenga en cuenta todas las advertencias.
- Siga todas las instrucciones.
- No utilice este aparato cerca del agua.
- Límpielo sólo con un paño seco.
- No bloquee ningún orificio de ventilación. Realice la instalación de acuerdo con las instrucciones del fabricante.
- No instale cerca de ninguna fuente de calor, como radiadores, rejillas de aire caliente, estufas u otros aparatos (incluyendo amplificadores) que generen calor.
- No frustre el objetivo de seguridad del enchufe polarizado o con toma de tierra. Un enchufe polarizado tiene dos patas, una más ancha que la otra. Un enchufe con toma de tierra tiene dos patas y una tercera punta de tierra. La pata ancha o tercera punta se proporciona por seguridad. Si el enchufe proporcionado no se ajusta a su toma, póngase en contacto con un electricista para la sustitución de la toma obsoleta.
- Proteja el cable eléctrico para que no pueda pisarse o quedar pillado, particularmente en enchufes, receptáculos de entrada y en el punto de salida del dispositivo.
- Utilice sólo acoplamientos y accesorios especificados por el fabricante.
- Use sólo con un carro, base, trípode, soporte, o mesa especificados por el fabricante, o vendidos con el aparato. Cuando use un carro, tenga cuidado al mover la combinación de carro/aparato para evitar daños por sobresalir la punta.

- Desenchufe este dispositivo durante tormentas eléctricas o cuando no se utilice durante largos periodos de tiempo.
- Consulte todas las necesidades de asistencia con personal cualificado. Se requiere asistencia cuando el dispositivo resulta dañado de cualquier modo, por ejemplo, si se producen daños en el enchufe o en el cable de alimentación, si se ha derramado algún líquido o se ha caído algún objeto en el dispositivo, si se ha expuesto el dispositivo a la lluvia o a la humedad, o si no funciona con normalidad o se ha caído.
- Desconecte la alimentación antes de enchufar o desenchufar equipos.
- No instale el dispositivo expuesto a la luz directa del sol.
- El dispositivo se debe instalar de modo que el cable de alimentación se pueda retirar de la toma de pared o del propio dispositivo con el fin de desconectar la corriente eléctrica.
- Evite que entren objetos extraños en el dispositivo.

ADVERTENCIA:

PARA REDUCIR EL RIESGO DE INCENDIO O DE DESCARGA ELÉCTRICA, NO EXPONGA ESTE DISPOSITIVO A LA LLUVIA O A LA HUMEDAD. NO SE DEBE EXPONER EL APARATO A GOTEOS O SALPICADURAS. NO SE DEBEN COLOCAR SOBRE EL APARATO OBJETOS LLENOS DE LÍQUIDOS (COMO JARRAS).

ADVERTENCIA:

PARA EVITAR DESCARGAS ELÉCTRICAS, NO RETIRE LA CUBIERTA. NO EXISTEN PIEZAS ÚTILES PARA EL USUARIO EN EL INTERIOR. SÓLO EL PERSONAL DE ASISTENCIA CUALIFICADO DEBE EFECTUAR LAS REPARACIONES.

El símbolo del rayo con punta de flecha, dentro de un triángulo equilátero, se emplea para alertar al usuario de la presencia de "tensión peligrosa" sin aislamiento dentro de la caja del producto, que puede ser de magnitud suficiente para constituir un riesgo de descarga eléctrica a las personas.

El signo de exclamación dentro de un triángulo equilátero se emplea para alertar al usuario de la presencia de instrucciones importantes de funcionamiento y mantenimiento (asistencia) en el texto que acompaña al dispositivo.

ADVERTENCIA:

ESTE ES UN DISPOSITIVO DE FABRICACIÓN CORRESPONDIENTE A LA CLASE I. SE DEBE CONECTAR A UNA TOMA ELÉCTRICA CON TERMINAL DE TIERRA.

IMPORTANTE:

Este dispositivo puede ser utilizado con cableado de salida de la Clase 2.

Francais (French)

Consignes de sécurité importantes

- Lisez attentivement ces instructions.
- Conservez ces instructions à portée de la main.
- Prêtez attention à tous les avertissements.
- Suivez toutes les instructions.
- N'utilisez pas cet appareil à proximité de l'eau.
- Utilisez uniquement un chiffon ou un tissu sec pour nettoyer l'appareil.
- Ne bloquez pas les orifices d'aération. Installez l'appareil conformément aux instructions du fabricant.
- N'installez pas l'appareil à proximité de sources de chaleur (radiateurs, registres de chaleur, poêles ou autres appareils, y compris les amplificateurs, qui produisent de la chaleur).
- Ne désactivez pas les dispositifs de sécurité de la fiche polarisée ou à tige de terre. Les fiches polarisées présentent deux broches, dont l'une est plus large que l'autre. Les fiches à tige de terre présentent deux broches ainsi qu'une tige de mise à la terre. La broche large et la tige de terre contribuent à votre sécurité. Si la fiche fournie ne convient pas à la prise de courant, adressez-vous à un électricien pour remplacer la prise de courant obsolète.
- Veillez à ce que le cordon d'alimentation ne puisse être écrasé ou coincé, en particulier au niveau des fiches, des prises de courant et au point de raccordement à l'appareil.
- Utilisez uniquement les cordons et accessoires recommandés par le fabricant.
- Utilisez seulement avec un chariot, stand, trépied, monture ou table spécifié par le fabricant, ou vendu avec l'unité. Si vous utilisez un chariot, soyez prudent lorsque vous déplacez l'ensemble chariot/unité pour éviter des blessures ou une chute.

- Débranchez l'appareil en cas d'orage ou s'il ne doit pas être utilisé pendant une période prolongée.
- Pour toute réparation, adressez-vous à un technicien qualifié. Une révision s'impose lorsque l'appareil a été endommagé de quelque manière que ce soit, par exemple si le cordon d'alimentation ou la fiche est détérioré, si du liquide s'est répandu sur l'appareil ou si des objets y ont été introduits, si l'appareil a été exposé à la pluie ou à l'humidité, s'il ne fonctionne pas normalement ou s'il a subi une chute.
- Débranchez l'alimentation avant de raccorder ou de débrancher des appareils.
- N'installez pas l'appareil à la lumière directe du soleil.
- L'appareil doit être installé de manière à pouvoir débrancher le cordon d'alimentation de la prise murale ou de l'arrière de l'appareil pour couper l'alimentation.
- Veillez à empêcher l'introduction de tout corps étranger dans l'appareil.

AVERTISSEMENT :

POUR PRÉVENIR TOUT RISQUE D'INCENDIE OU D'ÉLECTROCUTION, N'EXPOSEZ PAS CET APPAREIL À LA PLUIE OU À L'HUMIDITÉ. PROTÉGEZ L'APPAREIL DE TOUTE PROJECTION ET DE TOUT ÉCOULEMENT DE LIQUIDE. AUCUN OBJET CONTENANT DU LIQUIDE (VASES, ETC.) NE DOIT ÊTRE DÉPOSÉ SUR L'APPAREIL.

AVERTISSEMENT :

POUR PRÉVENIR TOUT RISQUE D'ÉLECTROCUTION NE RETIREZ PAS LE COUVERCLE. L'APPAREIL NE CONTIENT AUCUNE PIÈCE NÉCESSITANT L'INTERVENTION DE L'UTILISATEUR. L'APPAREIL PEUT UNIQUEMENT ÊTRE OUVERT PAR UN TECHNICIEN QUALIFIÉ.

Le symbole de l'éclair avec une pointe de flèche entouré par un triangle équilatéral attire l'attention de l'utilisateur sur la présence, dans le boîtier de l'appareil, d'éléments non isolés dont la tension électrique est suffisamment élevée pour présenter un risque d'électrocution.

Le symbole du point d'exclamation entouré par un triangle équilatéral attire l'attention de l'utilisateur sur des instructions importantes, reprises dans la documentation accompagnant l'appareil, et concernant le fonctionnement et l'entretien.

AVERTISSEMENT :

CET APPAREIL APPARTIENT À LA CATÉGORIE DES APPAREILS DE CLASSE I. IL DOIT ÊTRE RACCORDÉ À UNE PRISE DE COURANT AVEC BORNE DE MISE À LA TERRE.

IMPORTANT :

Cet équipement peut être utilisé avec un câblage type Classe 2 (très basse tension).

Italiano (Italian)

Importanti istruzioni per la sicurezza

- Leggere queste istruzioni
- Conservare queste istruzioni
- Osservare scrupolosamente tutti gli avvertimenti
- Seguire tutte le istruzioni
- Non utilizzare questo apparecchio in prossimità d'acqua.
- Pulirlo soltanto mediante un panno secco.
- Non ostruire alcun orifizio di ventilazione. Installare questo apparecchio osservando le istruzioni impartire dal costruttore.
- Non installare quest'apparecchio accanto ad una qualsiasi sorgente di calore, quale un radiatore, un pannello radiante, una stufa, o un qualsiasi altro dispositivo (compreso un amplificatore) che emetta calore.
- Non tentare di modificare la spina polarizzata, o la spina con connessione di terra, inficiando così il suo scopo di sicurezza. Una spina polarizzata presenta due lame, una più larga dell'altra. Una spina di tipo con connessione terra presenta due lame ed un piolo destinato alla connessione a terra. La lama più larga, o il terzo piolo, sono necessari per scopi di sicurezza. Se la spina fornita a corredo non potesse essere connessa alla presa di rete, consultare uno specialista per la sostituzione della presa, che dev'essere oramai obsoleta.
- Proteggere il cordone d'alimentazione da calpestamenti o punture, specie a livello delle spine, dei ricettacoli previsti per riporlo, e del punto da cui fuoriesce dall'apparecchio.
- Utilizzare soltanto aggiunte/accessori specificati dal costruttore.
- Usare soltanto con un carrello, scaffale, treppiede, supporto, o tavolo consigliato dal fornitore o venduto con il prodotto. Quando si usa un carrello, prestare attenzione quando si sposta il gruppo carrello/apparecchio per evitare ferimento alle persone.

- Staccare quest'apparecchio dalla rete durante tempeste con fulmini, o se si prevede di lasciarlo inutilizzato per un lungo periodo di tempo.
- Per la manutenzione, richiedere il servizio da parte di personale qualificato. È necessario l'intervento del servizio di assistenza quando l'apparecchio presenta un qualunque tipo di danno, come ad esempio al cordone di alimentazione o la sua spina, nel caso che nel contenitore sia penetrato un liquido o un piccolo oggetto estraneo, se l'apparecchio è stato esposto alla pioggia o all'umidità, o se non dovesse funzionare normalmente, o se ancora fosse caduto per terra.
- Staccare l'alimentazione prima di connettere o sconnettere l'apparecchio ad altri dispositivi.
- Non installarlo alla luce diretta del sole.
- L'apparecchio dev'essere installato in modo che il cordone d'alimentazione possa essere staccato facilmente dalla presa di rete o dall'apparecchio stesso, per poter staccarlo dalla rete.
- Evitare che oggetti estranei possano penetrare nell'apparecchio.

AVVERTENZA:

PER RIDURRE IL RISCHIO DI INCENDIO, O DI SCOSSA ELETTRICA, NON ESPORRE QUESTO APPARECCHIO ALLA PIOGGIA O ALL'UMIDITÀ. QUESTO DISPOSITIVO NON DEV'ESSERE ESPOSTO NÉ A GOCCIOLII, NÉ A SPRUZZI DI LIQUIDI. NON SI DEVONO PORRE SU QUESTO APPARECCHIO OGGETTI RIEMPITI CON LIQUIDI, COME AD ESEMPIO VASI DA FIORI.

AVVERTENZA:

PER PREVENIRE SCOSSE ELETTRICHE, NON RIMUOVERE IL COPERCHIO. ALL'INTERNO NON VI SONO PARTI DI INTERESSE PER L'UTENTE. QUESTO SERVIZIO DEV'ESSERE SVOLTO SOLTANTO DA PERSONALE D'ASSISTENZA QUALIFICATO.

Un simbolo di fulmine con l'estremità a forma di freccia all'interno di un triangolo equilatero, è previsto per indicare all'utente la presenza di 'tensioni pericolose' non isolate all'interno del contenitore del prodotto, che si possono rivelare di un'importanza sufficiente da costituire un rischio di scosse elettriche per le persone.

Il punto esclamativo all'interno di un triangolo equilatero è previsto per avvertire l'utente della presenza di importanti istruzioni operative e di manutenzione (servizio) nella documentazione a corredo pertinente questo apparecchio.

AVVERTENZA:

QUESTO È UN APPARECCHIO COSTRUITO SECONDO LA CLASSE I. DEV'ESSERE CONNESSO AD UNA PRESA ELETTRICA CHE PRESENTA UN PIOLO MESSO A TERRA.

IMPORTANTE:

Questa unità può essere considerata di classe 2 (a doppio isolamento).

日本語(Japanese)

安全取扱説明書

- 本取扱説明書を必ずお読み下さい。
- 本書を保管して下さい。
- “ 警告 ”に留意して下さい。
- 本書の指示に必ず従って下さい。
- 水の近くで使用しないで下さい。
- 拭取りには乾布を使用して下さい。
- 通気スペースを必ず設けてください。（メーカー）取扱説明書に従い設置して下さい。
- ラジエータ、ヒートレジスタ、ストーブ、その他熱を生成する機器（アンプも含む）の近くに設置しないで下さい。
- 電源コードは安全のため付属の二極性または接地タイプのものを、改造せずに使って下さい。二極性プラグには安全のため幅の狭いブレードと広いブレードが付いています。接地タイプには2つのブレードと接地ピンがあります。接地タイプは安全のため幅の狭いブレード、広いブレードと接地ピンが用意されています。お使いのコンセントに合わない場合は、専門の方に取替えてもらいましょう。
- 電源コードを踏んだり、プラグ、レセプタクル、本体との接地部分を曲げないで下さい。
- メーカー指定の付属品のみお使い下さい。
- 製造元の指定する、または製品と一緒に販売されているカート、スタンド、三脚台、ブラケット、テーブルのみを使用するようにしてください。カートを使用して製品を移動する際には、転倒によって怪我をしないように気をつけてください。

- 雷または長期間使用しない間はプラグを抜いておいて下さい。
- 電源コードやプラグの損傷、液体の付着、衝撃による損傷、本体が雨などにさらされた時、誤操作、落とした場合は、専門家にみてもらって下さい。
- 機器を接続または取り外す際は電源を抜いて下さい。
- 直射日光を避けて下さい。
- 本体は、コンセント側もしくは本体側から電源コードを抜いてメイン電力を落とせるように設置して下さい
- 異物を本体に入れないで下さい。

警告:

火災・感電の恐れがあるため、本体を雨や湿度の高い場所で使用しないで下さい。また水滴にも注意して下さい。花瓶などの近くには設置しないで下さい。

警告:

感電を避けるためカバーを取り外さないで下さい。本体内部にはユーザーが修理可能なパーツはありません。修理は必ず専門家に行ってもらって下さい。

左記のマークは、人体に電気的影響を及ぼしかねない、本体内の危険電圧を示します。

左記マークは、本体同梱のマニュアルにそって メンテナンスの必要な個所を示します。

警告:

本製品は、 CLASS 1 に準拠した製品使用の際は、アース接地をしたコンセントにつなげて使用して下さい。

重要

このデバイスにはClass 2の配線が使用できます

Nederlands (Dutch)

Belangrijke veiligheidsaanwijzingen

- Lees deze aanwijzingen.
- Bewaar deze aanwijzingen.
- Let op alle waarschuwingen.
- Volg alle aanwijzingen op.
- Gebruik dit apparaat niet in de nabijheid van water.
- Uitsluitend met een droge doek reinigen.
- Sluit geen enkele ventilatieopening af. Installeren overeenkomstig de aanwijzingen van de fabrikant.
- Niet opstellen in de nabijheid van warmtebronnen zoals radiatoren, kachels, fornuizen, of andere apparaten (inclusief versterkers) die warmte produceren.
- Neem de veiligheidsmaatregel van de gepolariseerde of de geaarde stekker in acht. Een gepolariseerde stekker heeft twee polen waarvan de ene breder is dan de andere. Een geaarde stekker heeft twee polen en een derde aardingspool. De bredere pool of de derde aardingspool zijn voor uw veiligheid bedoeld. Als de meegeleverde stekker niet in uw stopcontact past, neem dan contact op met een elektrotechnisch installateur voor het vervangen van het verkeerde stopcontact.
- Zorg ervoor dat er niet over het netsnoer gelopen kan worden en dat het netsnoer niet beklemd kan raken, met name bij stekkers, stopcontacten en op de plaats waar het netsnoer uit het apparaat komt.
- Gebruik uitsluitend apparatuur / accessoires die door de fabrikant gespecificeerd zijn.
- Gebruik het toestel alleen met een karretje, standaard, statief, steun of tafel die door de fabrikant is opgegeven of die bij het toestel wordt verkocht. Wees voorzichtig wanneer u een karretje gebruikt om het apparaat te verplaatsen om te voorkomen dat het toestel of het karretje kantelt en eventueel tot verwondingen leidt.

- Koppel dit apparaat los tijdens onweer of wanneer het apparaat voor langere tijd niet gebruikt wordt.
- Laat alle onderhoud- en reparatiewerkzaamheden door gekwalificeerde vakmensen uitvoeren. Service/reparatie is noodzakelijk wanneer het apparaat schade heeft opgelopen doordat bijvoorbeeld het netsnoer of de stekker beschadigd is, er vloeistof of voorwerpen in het apparaat terechtgekomen zijn, het apparaat blootgesteld is aan regen of vocht, of wanneer het apparaat niet juist werkt of gevallen is.
- Vóór het aansluiten of loskoppelen van apparatuur, eerst het apparaat loskoppelen van het lichtnet.
- Niet in direct zonlicht opstellen.
- Het apparaat moet zodanig opgesteld worden dat het netsnoer zowel uit het stopcontact als uit het apparaat zelf verwijderd kan worden. Dit om het apparaat van het lichtnet los te kunnen koppelen.
- Voorkom dat er vreemde voorwerpen in het apparaat terecht kunnen komen.

WAARSCHUWING:

STEL DIT APPARAAT NIET BLOOT AAN REGEN OF VOCHT, OM HET RISICO OP BRAND OF EEN ELEKTRISCHE SCHOK TE VERMINDEREN. HET APPARAAT MAG NIET BLOOTGESTELD WORDEN AAN DRUIPEND OF OPSPATTEND WATER. VOORWERPEN DIE VLOEISTOFFEN BEVATTEN, ZOALS VAZEN, MOGEN NIET OP HET APPARAAT GEPLAATST WORDEN.

WAARSCHUWING:

TENEINDE EEN ELEKTRISCHE SCHOK TE VERMIJDEN, DE BEHUIZING NIET VERWIJDEREN. DE BINNENZIJDE VAN HET APPARAAT BEVAT GEEN ONDERDELEN DIE DOOR DE GEBRUIKER TE SERVICEN ZIJN. REPARATIEWERKZAAMHEDEN UITSLUITEND DOOR GEKWALIFICEERDE VAKMENSEN LATEN UITVOEREN.

Het bliksemschicht-met-pijlpunt symbool binnen een gelijkzijdige driehoek, heeft ten doel de gebruiker te waarschuwen voor de aanwezigheid van niet geïsoleerde "gevaarlijke spanningen" binnenin het product, die voldoende hoog kunnen zijn om voor personen een risico te vormen op het krijgen van een elektrische schok.

Het uitroepteken binnen een gelijkzijdige driehoek heeft ten doel de gebruiker te waarschuwen voor de aanwezigheid van belangrijke gebruik- en onderhoudsaanwijzingen (service) in de bij het apparaat meegeleverde documentatie.

WAARSCHUWING:

DIT IS EEN KLASSE I APPARAAT. HET APPARAAT MOET OP EEN GEAARD STOPCONTACT AANGESLOTEN WORDEN.

BELANGRIJK:

Dit toestel kan gebruikt worden met externe klasse 2 bedrading.

Русский (Russian)

Важные инструкции по технике безопасности

- Прочитайте эти инструкции.
- Сохраните эти инструкции.
- Примите во внимание все предостережения.
- Следуйте всем инструкциям.
- Не используйте данное устройство возле воды.
- Очищайте только сухой тряпкой.
- Не перекрывайте вентиляционные отверстия. Произведите установку в соответствии с инструкциями производителя.
- Не устанавливайте устройство возле источников тепла, таких как радиаторы, обогреватели, плиты и другие приборы (включая усилители), вырабатывающие тепло.
- Не пренебрегайте предохранительным назначением полярной вилки или вилки заземленного типа. Полярная вилка имеет две контактные пластины, одна из которых шире другой. У вилки заземленного типа – две контактные пластины и один заземляющий штырь. Широкая контактная пластина или заземляющий штырь предусмотрены для Вашей безопасности. Если имеющаяся вилка не подходит для Вашей розетки, проконсультируйтесь с электриком по поводу замены розетки устаревшего типа.
- Следите, чтобы по шнуру питания не ходили, и предотвращайте его сдавливание, особенно возле вилок, электрических розеток и в месте их выхода из устройства.
- Используйте только крепеж и принадлежности, указанные изготовителем
- Используйте только передвижную или стационарную подставку, штатив, кронштейн или стол, указанные изготовителем или входящие в комплект поставки данной аппаратуры. При использовании передвижной подставки соблюдайте осторожность, во избежание опрокидывания и сопутствующих ему травм.

- Отключайте устройство от сети электропитания в грозу или в случае, если устройство долго не используется.
- По всем вопросам относительно техобслуживания обращайтесь к квалифицированному сервисному персоналу. Техобслуживание требуется, если устройство было каким-либо образом повреждено, например, при повреждении шнура питания или вилки, при попадании жидкости или падении предметов на устройство, а также, если устройство находилось под дождем или подверглось воздействию влаги, не функционирует нормально или было уронено.
- Отключите питание прежде, чем подсоединять или отсоединять оборудование.
- Не устанавливайте устройство под прямыми солнечными лучами.
- Устройство нужно установить так, чтобы шнур питания можно было вынуть как из стенной розетки питания, так и из самого прибора, чтобы отключить питание.
- Не допускайте проникновения в устройство инородных предметов.

ПРЕДОСТЕРЕЖЕНИЕ:

ДЛЯ СНИЖЕНИЯ РИСКА ВОЗНИКНОВЕНИЯ ПОЖАРА ИЛИ ПОРАЖЕНИЯ ЭЛЕКТРИЧЕСКИМ ТОКОМ НЕ ПОДВЕРГАЙТЕ ДАННОЕ УСТРОЙСТВО ВОЗДЕЙСТВИЮ ДОЖДЯ ИЛИ ВЛАГИ. НА УСТРОЙСТВО НЕ ДОЛЖНЫ ПОПАДАТЬ КАПЛИ ИЛИ БРЫЗГИ. ПРЕДМЕТЫ, НАПОЛНЕННЫЕ ЖИДКОСТЬЮ, ТАКИЕ КАК ВАЗЫ, НЕЛЬЗЯ СТАВИТЬ НА ДАННОЕ УСТРОЙСТВО.

ПРЕДОСТЕРЕЖЕНИЕ:

ДЛЯ ПРЕДОТВРАЩЕНИЯ ПОРАЖЕНИЯ ЭЛЕКТРИЧЕСКИМ ТОКОМ НЕЛЬЗЯ СНИМАТЬ КОЖУХ. ВНУТРИ УСТРОЙСТВА НЕТ ДЕТАЛЕЙ, КОТОРЫЕ ОБСЛУЖИВАЮТСЯ ПОЛЬЗОВАТЕЛЕМ. ТЕХНИЧЕСКОЕ ОБСЛУЖИВАНИЕ ДОЛЖНО ВЫПОЛНЯТЬСЯ ТОЛЬКО КВАЛИФИЦИРОВАННЫМ СЕРВИСНЫМ ПЕРСОНАЛОМ.

Значок вспышки молнии со стрелкой внутри равностороннего треугольника предупреждает пользователя о наличии неизолированного «опасного напряжения» внутри корпуса изделия, которое может иметь достаточную силу, чтобы представлять риск поражения человека электрическим током.

Восклицательный знак внутри равностороннего треугольника предупреждает пользователя о наличии важных инструкций по эксплуатации и техническому (сервисному) обслуживанию в литературе, идущей в комплекте с прибором

ПРЕДОСТЕРЕЖЕНИЕ:

ДАННОЕ УСТРОЙСТВО ОСНАЩЕНО КОНСТРУКЦИЕЙ ОТНОСИТСЯ К КОНСТРУКЦИИ КЛАССА I. ЕГО НЕОБХОДИМО ПОДКЛЮЧАТЬ К ЭЛЕКТРИЧЕСКОЙ РОЗЕТКЕ С ЗАЗЕМЛЯЮЩИМ ТЕРМИНАЛОМ ШТЫРЁМ.

ВНИМАНИЕ:

Этот аппарат можно использовать с выводными кабелями класса 2.

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Crestron Electronics, Inc.
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Safety Instructions – DOC. 6607B
(2018589)
03.10
Specifications subject to
change without notice.

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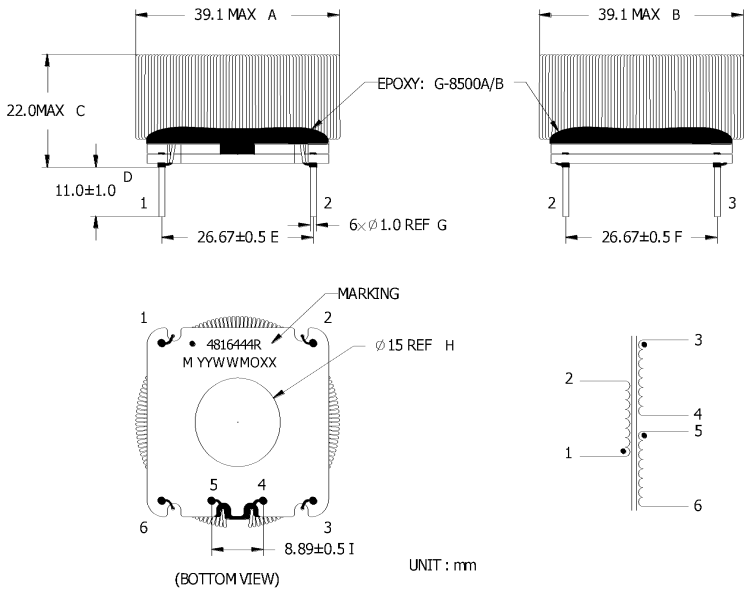

RoHS compliant product — Lead Free

NOTES:

Meets UL Class A

MTX Approval			
Tech:	KLW	Eng.:	DJL
Date:	11/14/18	Date:	11/14/18

Minntronix, Inc.
1600 Ninth Avenue SW
Watertown, SD 57201
USA

Phone: (605) 884-0195
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(US / Canada)
www.minntronix.com

Customer: Crestron Electronics Inc	**Part No.:** 2050134	**Rev.:** N/A	**MTX P/N:** 4816444R	**Rev.:** A

▽ - Indicates Key Characteristic

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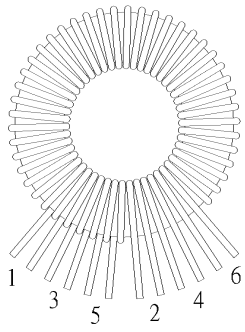
COIL WINDING INSTRUCTIONS

Step	Winding / Insulation	Material Reference	Start		Finish		No. Turns	Notes
			Pin #	Wire Route	Pin #	Wire Route		
1	W1	WIRE:0.4x2 Triple insulated 130°C	1		2		25 REF	
2	W2	WIRE:0.4x2 Triple insulated 130°C	3		4		25 REF	Trifilar winding
3	W3	WIRE:0.4x2 Triple insulated 130°C	5		6		25 REF	

WINDING CROSS SECTION



ASSEMBLY INSTRUCTIONS

Termination & Soldering:
1. RoHS Compliant

Assembly:
1. Use epoxy: G8500A/B to fix core, wire and base.

Varnish:
1. N/A

Customer:	Crestron Electronics Inc	Part No.:	2050134	Rev.:	N/A	MTX P/N:	4816444R	Rev.:	A

▽ - Indicates Key Characteristic

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ELECTRICAL SPECIFICATION AND TEST REPORT

Testing Item	Specification	Pin Numbers	Core(s):						Date Code:			
			Sample Test Data (samples with * retained at MTX)									
			1	2	3	4	5	6	7	8	9	10
INDUCTANCE @10kHz, 100mV	38.13uH±10%	1-2										
	38.13uH±10%	3-4										
	38.13uH±10%	5-6										
	Q	1-2										
LEAKAGE INDUCTANCE @100kHz, 100mV	0.6uH MAX	1-2										
		Tie3,4,5,6										
DC RESISTANCE	88mΩ TBD	1-2										
	85mΩ TBD	3-4										
	85mΩ TBD	5-6										
TURNS RATIO @20kHz, 1.0V IN-PUT: 1-2	1.00 ± 3%	5-6										
	1.00 ± 3%	3-4										

Customer:	Crestron Electronics Inc	Part No.:	2050134	Rev.:	N/A	MTX P/N:	4816444R	Rev.:	A

▽ - Indicates Key Characteristic

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MECHANICAL DIMENSION AND TEST REPORT

Test Instrument(s)	Printed Specification	Position	Sample Test Data (samples with * retained at MTX)									
			1	2	3	4	5	6	7	8	9	10
Caliper	39.1 MAX	A										
	39.1 MAX	B										
	22.0MAX	C										
	11.0±1.0	D										
	26.67±0.5	E										
	26.67±0.5	F										
	Φ1.0 REF	G										
	Φ15.0 ref	H										
	8.89±0.5	I										

Customer: Crestron Electronics Inc	**Part No.:** 2050134	**Rev.:** N/A	**MTX P/N:** 4816444R	**Rev.:** A

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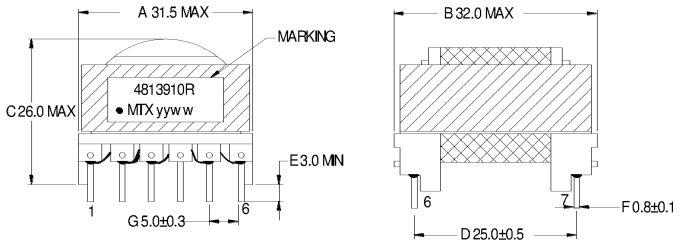
BILL OF MATERIALS

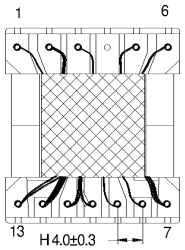
Name	Manufacturer	Description	UL File No.
CORE	MAGNETICS	T33x20x10.7 (55071-A2)	N/A
	CSC	MPP T33.8x19.3x11.6 CM330060	N/A
	Arnold	MP-130060-2	N/A
BASE	Nan Ya Plastics Corp Ccl Dep Electronic Material Div.	FR-4-86 (#1), FR-4-TL (#1) FR-4.0 130°C, 0.18m/m, UL 94V-0	E98983
	KINGBOARD LAMINATES HOLDINGS LTD	KB-6150 WHT (FR-4.0), 0.63m/m, 130°C, UL 94V-0	E123995
	GOLDENMAX INTERNATIONAL TECHNOLOGY LTD	ILM-R1(FR-4.0), 0.38m/m, 130°C, UL 94V-0	E22472
TIW WIRE	Furukawa Electric Co Ltd	TEX-E, TEX-EA, 1.41KV, 130°C	E206440
	E&B TECHNOLOGY CO LTD	E&B-XXXB,1410V,130°C	E315265
	Young Chang Silicone Co Ltd	STW-B, 1.4KV, 130°C	E242198
	Cosmolink CO LTD	TIW-M, 1.41KV, 130°C	E213764
EPOXY	GUDAK CHEMISTRY TECH (DONGGUAN) LTD	G-8500A/B, 130°C, 4.3m/m, UL 94V-0	E216733
INK	Hitachi or Markem-IMAJE SAS	JP-K23 (solvent type black ink) or 9175	N/A
SOLDER	Optional	Lead free	N/A

Customer:	Crestron Electronics Inc	Part No.:	2050134	Rev.:	N/A	MTX P/N:	4816444R	Rev.:	A

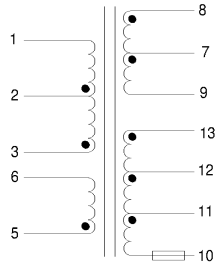
▽ - Indicates Key Characteristic

MINNTRONIX
Wind Up the Best





(BOTTOM VIEW)



UNIT: mm

RoHS compliant product — Pb Lead Free

NOTES:

UL CLASS B INSULATION SYSTEM: CIS.04

MTX Approval			
Tech:	KLW	Eng.:	DJL
Date:	1/10/18	Date:	1/10/18

Minntronix, Inc.
1600 Ninth Avenue SW
Watertown, SD 57201
USA

Phone: (605) 884-0195
Toll Free: (888) 244-3173
(US / Canada)
www.minntronix.com

Customer: Crestron Electronics Inc	**Part No.:** 2040578	**Rev.:** N/A	**MTX P/N:** 4813910R	**Rev.:** D

▽ - Indicates Key Characteristic

MINNTRONIX
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COIL WINDING INSTRUCTIONS

Step	Winding / Insulation	Material Reference	Start		Finish		No. Turns	Notes
			Pin #	Wire Route	Pin #	Wire Route		
1	W1	WIRE:0.4φ TIW-M(B)	3		2		20	Sparse winding one layer.
	Insulation	TAPE:3M#1350F-1x17.0mm					1	
2	W2	Copper:4mil*15mm	7		9		2	See Note 2.
	Insulation	TAPE:3M#1350F-1x17.0mm					1	
3	W3	Copper:4mil*4mm	8		7		2	See Note 1. Apply envelope tape on pin 1-5 side before winding. Wind both turns in one layer. Start winding on pin 1-6 side.
	Insulation	TAPE:3M#1350F-1x17.0mm					2	
4	W4	Wire:2xAWG#28 MW80 155°C	12		11		6	Wind all four wires in one compact layer and one sparse layer. Winding starts from pin 1-6 side then terminate on the corresponding pin after finishing winding.
	W5	Wire:2xAWG#28 MW80 155°C	11		10		6	
	Tube	AWG22L			V			
	Insulation	TAPE:3M#1350F-1x17.0mm					1	
5	W6	WIRE:2xAWG#28 MW80C 155°C	13		12		11	Wind in one sparse layer. Winding starts from pin 1-6 side.
	Insulation	TAPE:3M#1350F-1x17.0mm					1	
6	W7	WIRE:0.4φ TIW-M(B)	2		1		20	Sparse winding one layer
	Insulation	TAPE:3M#1350F-1x17.0mm					1	
7	W8	WIRE:0.4φ TIW-M(B)	5		6		5	Sparse winding one layer.
	Insulation	TAPE:3M#1350F-1x17.0mm					2	

Customer: Crestron Electronics Inc **Part No.:** 2040578 **Rev.:** N/A | **MTX P/N:** 4813910R **Rev.:** D

▽ - Indicates Key Characteristic

MINNTRONIX
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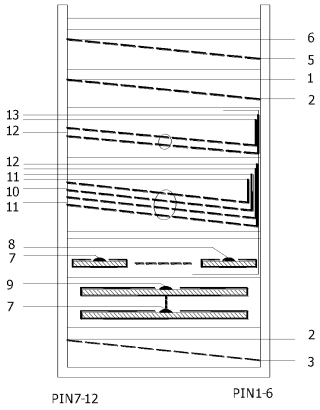
WINDING CROSS SECTION



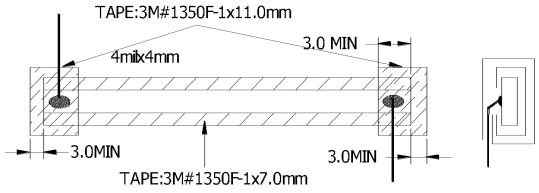
ASSEMBLY INSTRUCTIONS

Termination & Soldering:
1. RoHS Compliant

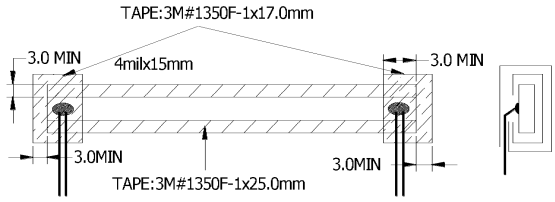
Assembly:
1. Air gap (about 0.48mm) in one center leg.
2. Use epoxy: 323LP to secure core halves together.
3. Use 3 layers tape:3M#1350F-1x11.0mm to fix two core halves.

Varnish:
1. Vacuum impregnated varnish.

Note 1:



Note 2:



Customer:	Crestron Electronics Inc	Part No.:	2040578	Rev.:	N/A	MTX P/N:	4813910R	Rev.:	D

▽ - Indicates Key Characteristic

Form: 7.3_3 Rev C

MINNTRONIX
Wind Up the Best

ELECTRICAL SPECIFICATION AND TEST REPORT

Testing Item	Specification	Pin Numbers	Core(s):						Date Code:			
			Sample Test Data (samples with * retained at MTX)									
			1	2	3	4	5*	6	7	8	9	10
INDUCTANCE @100kHz, 0.1V	354µH±7%	3-1										
DC RESISTANCE	330mΩ MAX	3-1										
	58mΩ MAX	5-6										
	15mΩ MAX	8-7										
	3.5mΩ MAX	7-9										
	85mΩ MAX	13-12										
	45mΩ MAX	12-11										
	45mΩ MAX	11-10										
TURNS RATIO @20kHz, 1.0V IN-PUT: 3-1	0.125V ± 3%	5-6										
	0.05V ± 3%	8-7										
	0.05V ± 3%	7-9										
	0.275V ± 3%	13-12										
	0.15V ± 3%	12-11										
	0.15V ± 3%	11-10										
HI-POT TEST	3750VAC, 5mA, 60Sec	1,5 to 8,13										
LEAKAGE INDUCTANCE @100kHz, 0.1V	4.5µH MAX	3-1 (7,8,9,10,11,12,13)										

Customer:	Crestron Electronics Inc	Part No.:	2040578	Rev.:	N/A	MTX P/N:	4813910R	Rev.:	D

▽ - Indicates Key Characteristic

MINNTRONIX
Wind Up the Best

MECHANICAL DIMENSION AND TEST REPORT

Test Instrument(s)	Printed Specification	Position	Sample Test Data (samples with * retained at MTX)									
			1	2	3	4	5*	6	7	8	9	10
Caliper	31.5 MAX	A										
	32.0 MAX	B										
	26.0 MAX	C										
	25.0±0.5	D										
	3.0 MIN	E										
	0.8±0.1	F										
	5.0±0.3	G										
	4.0±0.3	H										

Customer:	Crestron Electronics Inc	Part No.:	2040578	Rev.:	N/A	MTX P/N:	4813910R	Rev.:	D

▽ - Indicates Key Characteristic

Pulse Electronics

Material/Construction Letter

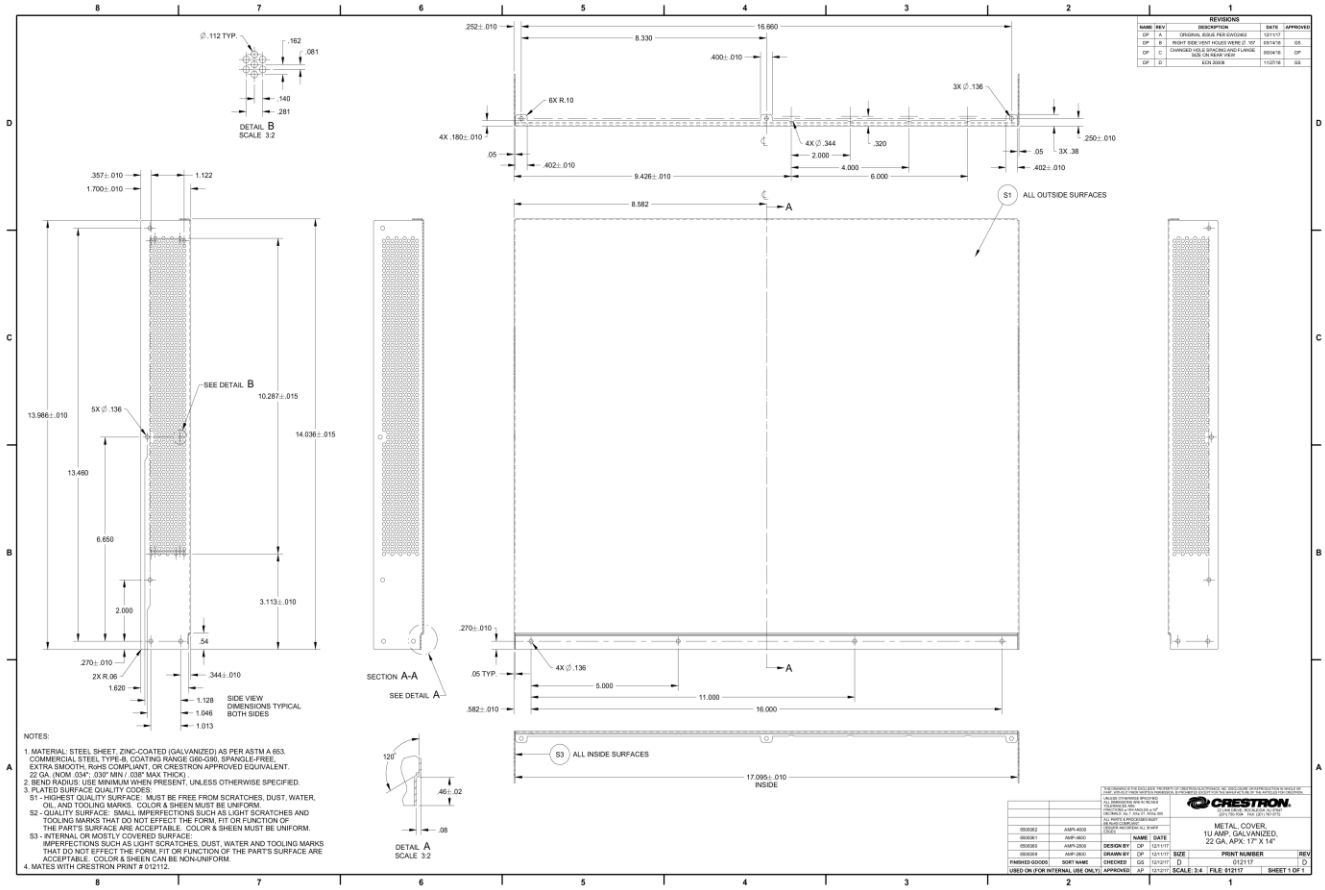
Product P.N.	**PA2517NL**
Description:	XFMR THT
Manufacturer:	Pulse Electronics Corporation
Customer:	

Material List

Core	Ferrite non-toroid EE16
Magnetic wire	MW83, Heavy insulation or better, thermal class: 180℃ Category: OBWM2 UL file: E234867 Manufacturer: SUNTEK or equivalent
Insulating wire	Triple insulation, STW-B 130℃ Category: OBJT2 UL file: E242198 Manufacturer: YONGCHANG SILICONE
Bobbin (Plastic)	Material: PHENOLIC PM-8375 Flammability: UL94V-0 Category: QMFZ2 RTI: 150 °C CTI: Group 3 UL File: E41429 Manufacturer: SUMITOMO BAKELITE CO LTD

Insulating Tape Material: #1350-1
Flammability: UL 510
UL file#: E17385
Category: OANZ2
RTI: 130 °C
Manufacturer: 3M

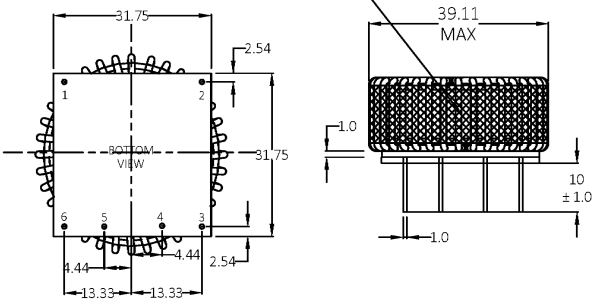
15255 Innovation Drive, Suite 100 San Diego, California 92128 Tel: +1(858) 674-8100 www.pulseelectronics.com


REVISIONS
NAME REV DESCRIPTION DATE APPROVED
DP A ORIGINAL ISSUE PER EVO2462 12/11/17
DP B RIGHT SIDE VENT HOLES WERE Ø .197 05/14/18 GS
DP C CHANGED HOLE SPACING AND FLANGE SIZE ON REAR VIEW 05/24/18 DP
DP D ECN 26008 11/27/18 GS
DETAIL B SCALE 3:2
SIDE VIEW DIMENSIONS TYPICAL BOTH SIDES
SECTION A-A
SEE DETAIL A
DETAIL A SCALE 3:2
S1 ALL OUTSIDE SURFACES
S3 ALL INSIDE SURFACES
NOTES:
1. MATERIAL: STEEL SHEET, ZINC-COATED (GALVANIZED) AS PER ASTM A 653. COMMERCIAL STEEL TYPE-B, COATING RANGE G60-G90, SPANGLE-FREE, EXTRA SMOOTH, RoHS COMPLIANT, OR CRESTRON APPROVED EQUIVALENT. 22 GA. (NOM .034", .030" MIN / .038" MAX THICK)
2. BEND RADIUS: USE MINIMUM WHEN PRESENT, UNLESS OTHERWISE SPECIFIED.
3. PLATED SURFACE QUALITY CODES:
S1 - HIGHEST QUALITY SURFACE: MUST BE FREE FROM SCRATCHES, DUST, WATER, OIL, AND TOOLING MARKS. COLOR & SHEEN MUST BE UNIFORM.
S2 - QUALITY SURFACE: SMALL IMPERFECTIONS SUCH AS LIGHT SCRATCHES AND TOOLING MARKS THAT DO NOT EFFECT THE FORM, FIT OR FUNCTION OF THE PART'S SURFACE ARE ACCEPTABLE. COLOR & SHEEN MUST BE UNIFORM.
S3 - INTERNAL OR MOSTLY COVERED SURFACE: IMPERFECTIONS SUCH AS LIGHT SCRATCHES, DUST, WATER AND TOOLING MARKS THAT DO NOT EFFECT THE FORM, FIT OR FUNCTION OF THE PART'S SURFACE ARE ACCEPTABLE. COLOR & SHEEN CAN BE NON-UNIFORM.
4. MATES WITH CRESTRON PRINT # 012112.
CRESTRON.
METAL, COVER, 1U AMP, GALVANIZED, 22 GA, APX: 17" X 14"
DESIGN BY DP 12/11/17
DRAWN BY DP 12/11/17
CHECKED GS 12/12/17
APPROVED AP 12/12/17
SIZE D
PRINT NUMBER 012117
REV D
SCALE: 3:4
FILE: 012117
SHEET 1 OF 1

REVISION			
REV	DESCRIPTION	DATE	APPD
0	INITIAL RELEASE	10/4/17	DG
1	CHANGE FROM CIRCULAR TO SQUARE BASE & PIN PITCH	10/5/17	DG
2	CHANGE FROM MPP CORE, REMOVE STAND OFFS	10/13/17	DG
3	ECO 000355	11/8/2017	CL

MARKINGS:

CT-8303-1
CET YYWW LXX



ELECTRICAL REQUIREMENTS:

INDUCTANCE AT 10KHZ, 0.1V
L(1-2): 38.12µH ± 10%
L(3-4): 38.12µH ± 10%
L(5-6): 38.12µH ± 10%

LEAKAGE INDUCTANCE 100kHz, 0.1V
LL(1-2): 500nH MAX

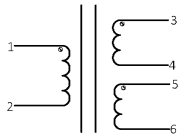
DCR(1-2): TBDmΩ MAX
DCR(3-4): TBDmΩ MAX
DCR(5-6): TBDmΩ MAX

TURNS RATIO AT 15KHz, 1.0V
T/R(1-2):(3-4):(5-6) = 1 : 1 : 1 ± 5%

HIPOT: 3.75KVAC, 3 SEC., WINDING TO WINDING

*CHECK POLARITY ON ALL WINDINGS PER SCHEMATIC

SCHEMATIC:



UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN mm

TOLERANCES:
.XX = +/- .2
.X = +/- .5

CET TECHNOLOGY, LLC
27 Roulston Rd
Windham, NH 03087
(603) 894-6100
www.cettechnology.com

DRAWN BY/DATE: DG 10/4/17
CHECKED BY/DATE: JC 10/4/17

TITLE: TRANSFORMER, CUSTOM TOROID, AC/DC PS

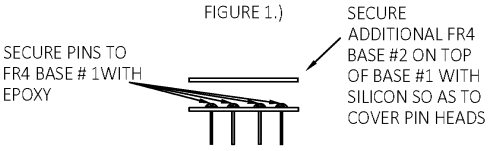
PART NUMBER: CT-8303-1
REV: 3

SHEET: 1 OF 2

REVISION			
REV	DESCRIPTION	DATE	APPD

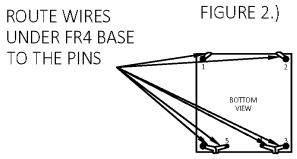
MATERIAL LIST:
CORE: MAGNETICS C055071A2, CHANG SUNG CM330060
BASE: CUSTOM FR4, 1.0mm THICK (2 BASES PER PART)
PINS: 1.0mm(18AWG) BUSS WIRE
WIRE: Ø0.4mm(26AWG) COSMOLINK TIW-M OR EQUIVALENT
TAPE: 3M #27 OR EQUIVALENT
SILICONE ADHESIVE: DOW CORNING 739 OR EQUIVALENT
EPOXY: WELL CHEMICAL 9001A/B-SY

FIGURE 1.)



WINDING INFORMATION:
BEFORE WINDING CREATE A BUNDLE OF WIRE USING 6 STRANDS OF TIW-MTWISTED ~ 4T's PER INCH
W1(1-2): 25T's 0.4mm TIW-M 130°C (START 1, FINISH 2)
W2(3-4): 25T's 0.4mm TIW-M 130°C (START 3, FINISH 4)
W3(5-6): 25T's 0.4mm TIW-M 130°C (START 5, FINISH 6)
*2 STRANDS OF THE TIW-M BUNDLE ARE TERMINATED TO EACH PIN FOR W1-W3
*SO AS TO KEEP LEAKAGE INDUCTANCE LOW THE START AND END SHOULD BE SEPERATED
*BY NO MORE THAN 2.5mm OF SPACE, THAT IS NO MORE THAN 2.5mm OF CORE DIAMETER SHOULD BE LEFT UNCOVERED BY THE WINDINGS
*SECURE WOUND COIL TO BASE #2 WITH SILICONE ADHESIVE
*SECURE PINS TO BASE #1 WITH EPOXY PER FIGURE 1
*SECURE BASE #2 ONTO BASE #1 USING SILICON
*ROUTE WIRE TO PINS ON BASE # 1 PER FIGURE 2

FIGURE 2.)



MANUFACTURING NOTES:
NOTE#1: PIN 1 TO BE MARKED WITH A RED DOT
NOTE#2: TRANSFORMERS ARE TO BE VARNISH DIPPED. SUFFICIENT COOL DOWN TIME MUST BE ALLOWED TO PREVENT POLYFOAM TRAYS FROM STICKING TO THE TRANSFORMER
NOTE#3: THE ELECTRICAL POLARITY(PHASING) AND THE MECHANICAL POLARITY MUST BE EQUIVALENT TO THE TRANSFORMER SCHEMATIC DESCRIBED IN THIS SPECIFICATION
NOTE#4: TRANSFORMERS ARE TO BE RoHS COMPLIANT
NOTE#5: CARTONS ARE TO BE MARKED RoHS

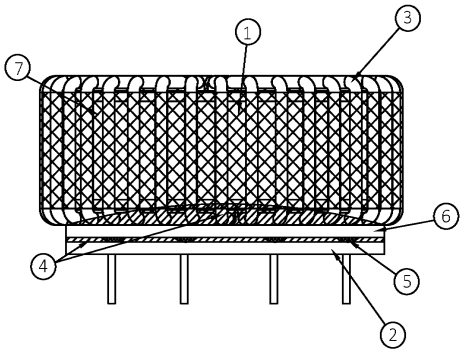
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN mm

TOLERANCES:
.XX = +/- .2
.X = +/- .5

CET TECHNOLOGY, LLC
27 Roulston Rd
Windham, NH 03087
(603) 894-6100
www.cettechnology.com

DRAWN BY/DATE: DG 10/4/17
CHECKED BY/DATE: JC 10/4/17
TITLE: TRANSFORMER, CUSTOM TOROID, AC/DC PS
PART NUMBER: CT-8303-1
REV: 3
SHEET: 2 OF 2

REVISION			
REV	DESCRIPTION	DATE	APPD
0	INITIAL RELEASE	11/14/18	DG



CONSTRUCTION DETAILS

NO.	ITEM	MATERIAL	SUPPLIER	UL FILE NO.
1	CORE	FERRITE	VARIOUS	N/A
2	BASE	FR-4	KINGBOARD	E123995
3	WINDING WIRE	TIW-M	COSMOLINK	E213764
4	ADHESIVE	SILICONE RTV	VARIOUS	N/A
5	EPOXY	9001A/B-SY	WELL	E229633
6	SPACER	FR-4	KINGBOARD	E123995
7	OUTER WRAP	#27	3M	E17385
8	VARNISH	ET-90(a)	TAIHU	228349

NOTES

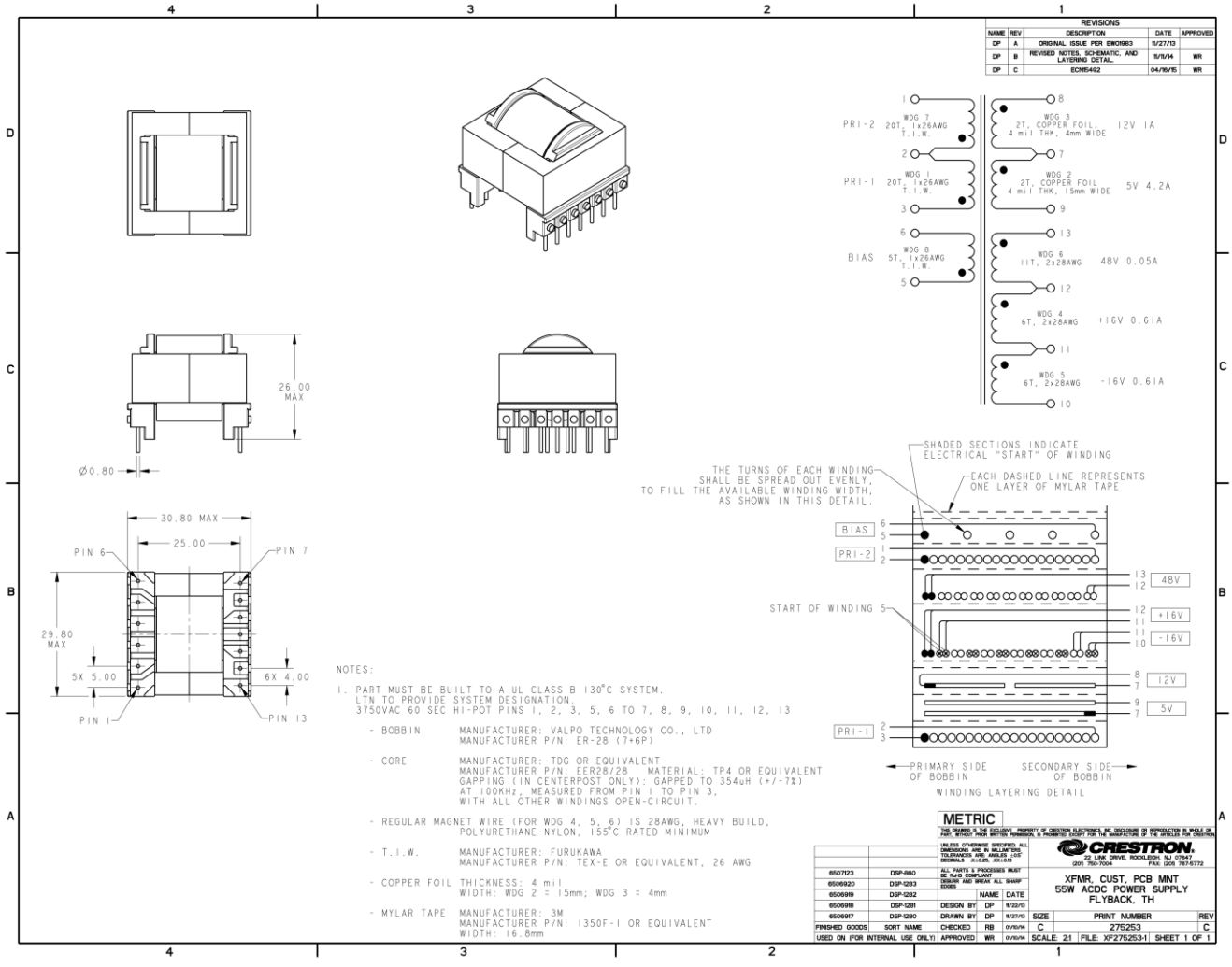
INSULATION SYSTEM IS DESIGNATED B5 UNDER UL FILE #174044
INSULATION SYSTEM IS RATED FOR 130°C
MAGNET WIRE IS SOURCED FROM ANY UL APPROVED VENDOR PER ANSI/UL1446

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN mm

TOLERANCES:
.XX = +/- .2
.X = +/- .5

CET TECHNOLOGY, LLC
27 Roulston Rd
Windham, NH 03087
(603) 894-6100
www.cettechnology.com

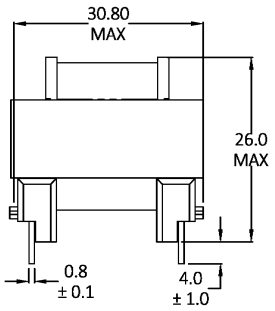
DRAWN BY/DATE: DG 11/14/18
CHECKED BY/DATE: JC 11/14/18
TITLE: CLASS B INSULATION SYSTEM B5, 130-TM
PART NUMBER: CT-8303-1
REV: 0
SHEET: 1 OF 1

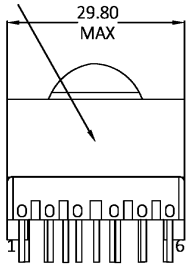

REVISIONS
NAME REV DESCRIPTION DATE APPROVED
DP A ORIGINAL ISSUE PER EWO1983 11/27/13
DP B REVISED NOTES, SCHEMATIC, AND LAYERING DETAIL 5/15/14 WR
DP C ECN5492 04/15/15 WR
PRI-2
WDG 7 20T, 1x26AWG T.I.W.
PRI-1
WDG 1 20T, 1x26AWG T.I.W.
BIAS
WDG 8 5T, 1x26AWG T.I.W.
WDG 3 2T, COPPER FOIL, 4 mil THK, 4mm WIDE 12V 1A
WDG 2 2T, COPPER FOIL 4 mil THK, 15mm WIDE 5V 4.2A
WDG 6 11T, 2x28AWG 48V 0.05A
WDG 4 6T, 2x28AWG +16V 0.61A
WDG 5 6T, 2x28AWG -16V 0.61A
26.00 MAX
Ø0.80
30.80 MAX
25.00
PIN 6
PIN 7
29.80 MAX
5X 5.00
6X 4.00
PIN 1
PIN 13
SHADED SECTIONS INDICATE ELECTRICAL "START" OF WINDING
THE TURNS OF EACH WINDING SHALL BE SPREAD OUT EVENLY, TO FILL THE AVAILABLE WINDING WIDTH, AS SHOWN IN THIS DETAIL.
EACH DASHED LINE REPRESENTS ONE LAYER OF MYLAR TAPE
BIAS
PRI-2
PRI-1
START OF WINDING
48V
+16V
-16V
12V
5V
PRIMARY SIDE OF BOBBIN
SECONDARY SIDE OF BOBBIN
WINDING LAYERING DETAIL
NOTES:
1. PART MUST BE BUILT TO A UL CLASS B 130°C SYSTEM.
LTN TO PROVIDE SYSTEM DESIGNATION.
3750VAC 60 SEC HI-POT PINS 1, 2, 3, 5, 6 TO 7, 8, 9, 10, 11, 12, 13
- BOBBIN MANUFACTURER: VALPO TECHNOLOGY CO., LTD
MANUFACTURER P/N: ER-28 (7+6P)
- CORE MANUFACTURER: TDG OR EQUIVALENT
MANUFACTURER P/N: EER28/28 MATERIAL: TP4 OR EQUIVALENT
GAPPING (IN CENTERPOST ONLY): GAPPED TO 354uH (+/-7%)
AT 100KHz, MEASURED FROM PIN 1 TO PIN 3,
WITH ALL OTHER WINDINGS OPEN-CIRCUIT.
- REGULAR MAGNET WIRE (FOR WDG 4, 5, 6) IS 28AWG, HEAVY BUILD,
POLYURETHANE-NYLON, 155°C RATED MINIMUM
- T.I.W. MANUFACTURER: FURUKAWA
MANUFACTURER P/N: TEX-E OR EQUIVALENT, 26 AWG
- COPPER FOIL THICKNESS: 4 mil
WIDTH: WDG 2 = 15mm; WDG 3 = 4mm
- MYLAR TAPE MANUFACTURER: 3M
MANUFACTURER P/N: 1350F-1 OR EQUIVALENT
WIDTH: 16.8mm
METRIC
THIS DRAWING IS THE EXCLUSIVE PROPERTY OF CRESTRON ELECTRONICS, INC. DISCLOSURE OR REPRODUCTION IN WHOLE OR PART, WITHOUT PRIOR WRITTEN PERMISSION, IS PROHIBITED EXCEPT FOR THE MANUFACTURE OF THE ARTICLES FOR CRESTRON.
UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN MILLIMETERS. TOLERANCES ARE: ANGLES ±0° DECIMALS .X ±0.25, .XX ±0.13
ALL PARTS & PROCESSES MUST BE RoHS COMPLIANT
DEBURR AND BREAK ALL SHARP EDGES
CRESTRON
15 LINK DRIVE, ROCKLEIGH, NJ 07647
(201) 750-7004 FAX: (201) 767-5772
6507123 DSP-950
6506920 DSP-1283
6506919 DSP-1282
6506918 DSP-1281
6506917 DSP-1280
NAME DATE
DESIGN BY DP 11/22/13
DRAWN BY DP 11/27/13
CHECKED RB 01/15/14
APPROVED WR 01/15/14
FINISHED GOODS SORT NAME
USED ON (FOR INTERNAL USE ONLY)
XFMR, CUST, PCB MNT
55W ACDC POWER SUPPLY
FLYBACK, TH
SIZE PRINT NUMBER REV
C 275253 C
SCALE: 2:1 FILE: XF275253-1 SHEET 1 OF 1

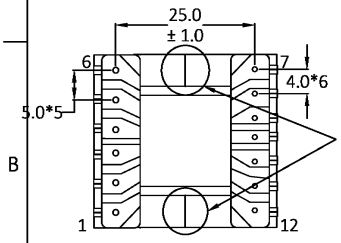
REVISION			
REV	DESCRIPTION	DATE	APPD
0-F	SEE OLD FORMAT	11/5/13	JB
G	ECO 000177	2/27/15	DG
H	ECO 000198	4/14/15	DG
I	ECO 000214	5/5/15	DG
J	DIMENSIONAL CHANGE ECO 000224	5/27/15	CL

MARKINGS:

CT-7629
2040578 REV C
CET YYWW F







DO NOT USE EPOXY ON OUTER LEGS. CORE IS SECURED USING TAPE AND VARNISH.

ELECTRICAL REQUIREMENTS:

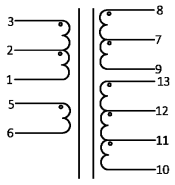
INDUCTANCE AT 100KHz, 1.0V
L(3-1): 354µH ± 7%
LEAKAGE INDUCTANCE AT 100KHz, 0.1V
LL(3-1): 4.5µH MAX

DCR(3-1): 300mΩ MAX
DCR(5-6): 65mΩ MAX
DCR(8-9): 25mΩ MAX
DCR(13-10): 150mΩ MAX

TURNS RATIO AT 15KHz, 1.0V
T/R(3-1):(13-12) = 3.63 : 1 ± 5%
T/R(3-1):(12-11) = 6.66 : 1 ± 5%
T/R(3-1):(11-10) = 6.66 : 1 ± 5%
T/R(3-1):(5-6) = 8 : 1 ± 5%
T/R(3-1):(8-7) = 20 : 1 ± 5%
T/R(3-1):(7-9) = 20 : 1 ± 5%

HIPOT: 3.75KVAC, 60 SEC., 0.5mA MAX, (1,2,3,5,6) TO (7,8,9,10,11,12,13)

SCHEMATIC:



*CHECK POLARITY ON ALL WINDINGS PER SCHEMATIC

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN mm

TOLERANCES:
.XX = +/- .2
.X = +/- .5

CET TECHNOLOGY, LLC
27 Roulston Rd
Windham, NH 03087
(603) 894-6100
www.cettechnology.com

DRAWN BY/DATE: DG 5/5/15
CHECKED BY/DATE: JC 5/5/15

TITLE: TRANSFORMER, PCB, FLYBACK 100KHz, MULTI OUTPUT

PART NUMBER: CT-7629 REV: J

SHEET: 1 OF 2

REVISION			
REV	DESCRIPTION	DATE	APPD

MATERIAL LIST:
CORE: TDG EER28B TP4 OR EQUIVALENT
GAPPED TO 221nH/N² ± 5%
BOBBIN: VALPO VP-2822 OR EQUIVALENT
MAGNET WIRE: MW28-C (2UEW+NY) 130°C Ø0.32mm(28AWG), Ø0.65mm(22AWG)
TRIPLE INSULATED WIRE: FURUKAWA TEX-E 130°C 0.4mm(26AWG) OR EQUIVALENT
COPPER FOIL: 0.08mm THICK, 4.0mm & 15.0mm WIDE, FULLY CUFFED WITH #1350
TAPE: 3M #1350 OR EQUIVALENT
TUBING: TEFLON 130°C MIN
EPOXY: G500 OR EQUIVALENT

WINDING INFORMATION:
W1(3-2): 20T's 0.4mm TEX-E 130°C (START 3, FINISH 2)
*WIND IN 1 LAYER ACROSS ENTIRE BOBBIN WINDOW
*1T #1350
W2(7-9): 2T's 15mm WIDE CUFFED FOIL (START 7, FINISH 9)
*TERMINATE TO PINS WITH 0.65mm MW28-C
*START AND STOP ARE TO BE COVERED WITH TEFLON TUBING
*1T #1350
W3(8-7): 2T's 4mm WIDE CUFFED FOIL (START 8, FINISH 7)
*TO BE WOUND EVENLY ACROSS ENTIRE BOBBIN WINDOW
*TERMINATE TO PINS WITH 0.65mm MW28-C
*START AND STOP ARE TO BE COVERED WITH TEFLON TUBING
*2T's #1350
W4(12-11): 6T's 0.32mmX2 STRANDS MW28-C 130°C (START 12, FINISH 11)
W5(11-10): 6T's 0.32mmX2 STRANDS MW28-C 130°C (START 11, FINISH 10)
*W4 & W5 ARE TO BE WOUND BIFILAR ON A SINGLE LAYER
*1T #1350
W6(13-12): 11T's 0.32mmX2 STRANDS MW28-C 130°C (START 13, FINISH 12)
*1T #1350
W7(2-1): 20T's 0.4mm TEX-E 130°C (START 2, FINISH 1)
*WIND IN 1 LAYER ACROSS ENTIRE BOBBIN WINDOW
*1T #1350
W8(5-6): 5T's 0.4mm TEX-E 130°C (START 5, FINISH 6)
*SPREAD TURNS EVENLY ACROSS ENTIRE BOBBIN WINDOW PER FIGURE 1
*2T's #1350
*ADD EPOXY TO THE CENTER LEG OF THE CORE AND INSERT INTO BOBBIN PER FIGURE 2
*2T's #1350 AROUND THE CORE

MANUFACTURING NOTES:
NOTE#1: PIN 1 TO BE MARKED WITH A RED DOT
NOTE#2: TRANSFORMERS ARE TO BE VACUUM IMPREGNATED
NOTE#3: THE ELECTRICAL POLARITY(PHASING) AND THE MECHANICAL POLARITY MUST BE EQUIVALENT TO THE TRANSFORMER SCHEMATIC DESCRIBED IN THIS SPECIFICATION
NOTE#4: TRANSFORMERS ARE TO BE RoHS COMPLIANT
NOTE#5: CARTONS ARE TO BE MARKED RoHS
NOTE#6: CORE GAP TO BE FILLED WITH EPOXY AS SHOWN IN FIGURE 2
NOTE#7: DO NOT ADD EPOXY TO OUTER LEGS OF THE CORE, EPOXY IS TO BE USED ON THE CENTER LEG ONLY

FIGURE 1

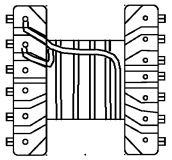
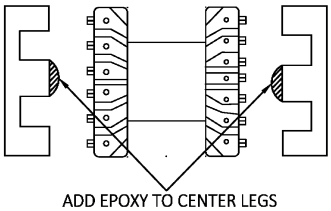


FIGURE 2



ADD EPOXY TO CENTER LEGS OF THE CORE AND INSERT INTO FINISHED COIL

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN mm

TOLERANCES:
.XX = +/- .2
.X = +/- .5

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DRAWN BY/DATE: DG 5/5/15
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TITLE: TRANSFORMER, PCB, FLYBACK 100KHz, MULTI OUTPUT

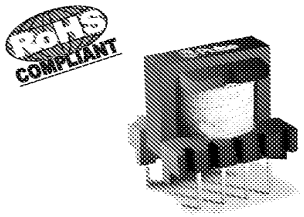
PART NUMBER: CT-7629 REV: I

SHEET: 2 OF 2

HIGH FREQUENCY WIRE WOUND TRANSFORMERS

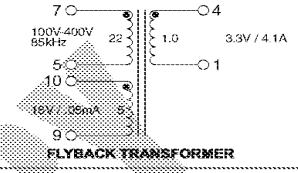
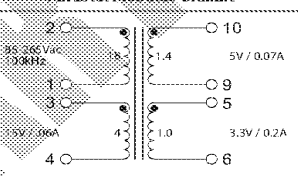
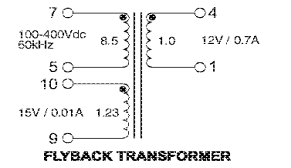
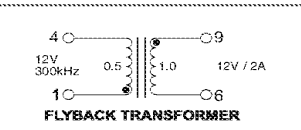
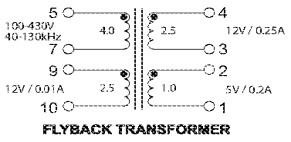
EE16 Platforms - THT Vertical

Pulse Electronics



- **AC/DC and DC/DC Switching Transformers**
- **Reinforced Insulation**
- **3000Vrms Hi-pot**
- **Power Range:** Up to 60W
- **Height:** 18.0mm Max
- **Footprint:** 18.2mm x 16.0mm Max
- **Topology:** Flyback

Electrical Specifications @ 25°C — Operating Temperature -40°C to 130°C

PA1931NL	Pri. Inductance	(7-5)	3200.0µH ±10%	
	Lk. Inductance	(7-5) with (1-4) shorted	56µH MAX	
	DCR	(7-5)	6400mΩ MAX	
		(4-1)	20mΩ MAX	
		(10-9)	360mΩ MAX	
	Hi-Pot	Pri-Sec	3000 Vrms	
	K1 Factor	14692.4		
PA2115NL	Pri. Inductance	(2-1)	1000µH ±15%	
	Lk. Inductance	(2-1) with (3,4,5,6,9,10) shorted	40µH MAX	
	DCR	(2-1)	3220mΩ MAX	
		(3-4)	210mΩ MAX	
		(5-6)	70mΩ MAX	
		(10-9)	80mΩ MAX	
	Hi-Pot	Pri-Sec	3000 Vrms	
	K1 Factor	5611.7		
PA2517NL	Pri. Inductance	(7-5)	1200.0µH ±10%	
	Lk. Inductance	(7-5) with (1,4,9,10) shorted	30µH MAX	
	DCR	(7-5)	4950mΩ MAX	
		(4-1)	52.5mΩ MAX	
		(10-9)	915mΩ MAX	
	Hi-Pot	Pri-Sec	3000 Vrms	
	K1 Factor	5509.6		
PA2531NL	Pri. Inductance	(1-4)	4.5µH ±12%	
	Lk. Inductance	(1-4) with (9-6) shorted	0.21µH MAX	
	DCR	(1-4)	142mΩ MAX	
		(9-6)	73mΩ MAX	
		Pri-Sec	4000 Vrms	
		71.0		
PA2621NL	Pri. Inductance	(5-7)	1000µH ±10%	
	Lk. Inductance	(5-7) with (4,3,2,1) shorted	17µH MAX	
	DCR	(5-7)	2430mΩ MAX	
		(4-3)	260mΩ MAX	
		(2-1)	82mΩ MAX	
		(9-10)	89mΩ MAX	
	Hi-Pot	Pri-Sec	4000 Vrms	
	K1 Factor	6313.1		

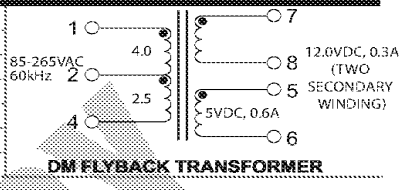
HIGH FREQUENCY WIRE WOUND TRANSFORMERS

EE16 Platforms - THT Vertical

(continued)

Electrical Specifications @ 25°C — Operating Temperature -40°C to 130°C

PA2655NL	Pri. Inductance	(1-4)	3100 µH ±10%
	Lk. Inductance	(1-4) (8,7,6,5)	62µH MAX
	DCR	(1-4)	4200mΩ MAX
		(5-6)	64mΩ MAX
		(7-8)	105mΩ MAX
	Hi-Pot	Pri-Sec	3000 Vrms
	K1 Factor	9687.0	



DM FLYBACK TRANSFORMER

NOTES:

1. The temperature of the component (ambient plus temperature rise) must be within the stated operating temperature range.
2. The above transformers and inductors have been tested and approved by Pulse's power IC partners and are sited in the appropriate datasheet or evaluation board documentation at these companies. To determine which IC and IC partners are matched with the above Pulse part numbers please consult the IC Cross Reference on the Pulse website.
3. For flyback topology applications, it is necessary to ensure that the transformer will not saturate in the application. The peak flux density (Bpk) should remain below 2700Gauss. To calculate the peak flux density use the following formula:

   Bpk (Gauss) = K1_Factor * Ipk(A)

4. In high volt-µsec applications, it is important to calculate the core loss of the transformer. Approximate transformer core loss can be calculated as:

   CoreLoss (W) = 3.6E-14 * (Freq_kHz)$^{1.63}$ * (ΔB_Gauss)$^{2.63}$

   where ΔB can be calculated as:

   For Flyback Topology: ΔB = K1_Factor * Δ(A)

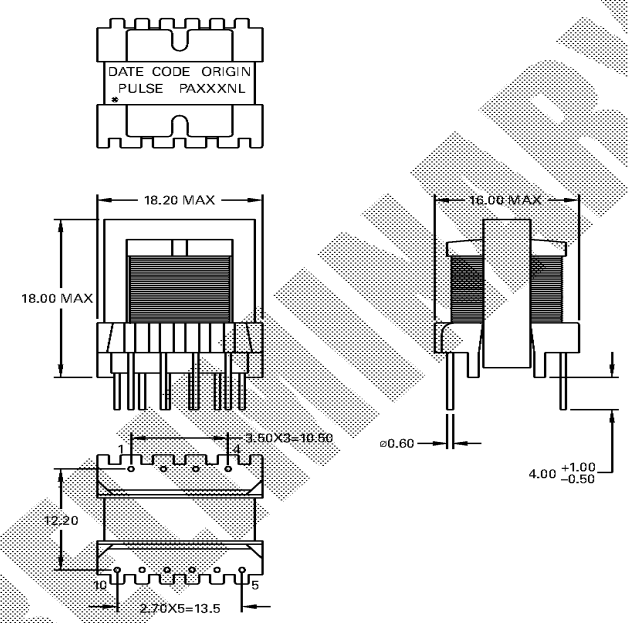
   For Forward Topology: ΔB = K1_Factor * Volt-µsec
5. The "NL" suffix indicates an RoHS-compliant part number. Non-NL suffixed parts are not necessarily RoHS compliant, but are electrically and mechanically equivalent to NL versions. If a part number does not have the "NL" suffix, but an RoHS compliant version is required, please contact Pulse for availability.

HIGH FREQUENCY WIRE WOUND TRANSFORMERS

EE16 Platforms - THT Vertical

Pulse Electronics

Mechanical



For More Information:

Pulse North America Headquarters	Pulse European Headquarters	Pulse China Headquarters	Pulse North China	Pulse South Asia	Pulse North Asia
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Test Record No. 1

The manufacturer submitted representative production samples of Power Amplifier, Models AMP-4600, and AMP-2800 for examination and test. Due to similarity of these models, testing is conducted on Model AMP-4600 as a representative of Model AMP-2800 and limited testing on Model AMP-2800.

The following tests were conducted:

Test	Testing Location/Comments
STEADY FORCE TEST, 250 N (4.4.4.2, ANNEX T.5)	
IMPACT TEST (4.4.4.4, ANNEX T.6)	
CLASSIFICATION OF ELECTRICAL ENERGY SOURCES (5.2, 5.7)	
MAXIMUM OPERATING TEMPERATURE FOR MATERIALS, COMPONENTS AND SYSTEMS (5.4.1.4, Annex B.2)	
DETERMINATION OF WORKING VOLTAGE (5.4.1.8)	
HUMIDITY CONDITIONING (5.4.8)	
ELECTRIC STRENGTH TEST (5.4.9)	
SAFEGUARDS AGAINST CAPACITOR DISCHARGE AFTER DISCONNECTION OF A CONNECTOR (5.5.2.2)	
RESISTANCE OF THE PROTECTIVE BONDING SYSTEM (5.6.6.2)	
PROSPECTIVE TOUCH VOLTAGE AND TOUCH CURRENT MEASUREMENT (5.7)	
INPUT TEST: PRODUCTS CONTAINING AN AUDIO AMPLIFIER (B.2.5)	
NORMAL OPERATING CONDITIONS TEMPERATURE MEASUREMENT (B.2.6)	
SIMULATED ABNORMAL OPERATING CONDITIONS (B.3)	
SIMULATED SINGLE FAULT CONDITIONS (B.4)	
TEST FOR THE PERMANENCE OF MARKINGS (ANNEX F.3.10)	
TRANSFORMER OVERLOAD (ANNEX G.5.3.3)	
LIMITED POWER SOURCE (ANNEX Q.1)	

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

The following supplements are provided as a part of this Test Record. NOTE: These supplements are only available to the Applicant via the CDA system.

Type	Supplement Id	Description
Datasheet	02-01	DS
Attachment	02-02	Dual Language CRD
Datasheet	02-03	DS2