CERTIFICATE OF COMPLIANCE

Certificate Number	20130508-E28476
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Issued to: TYCO ELECTRONICS CORP
2901 FULLING MILL RD
MIDDLETOWN PA 17057

This is to certify that representative samples of COMPONENT - CONNECTORS FOR USE IN DATA, SIGNAL, CONTROL AND POWER APPLICATIONS
Drawer Connector Series, AMPOWER Wave Crimp

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: Component Connectors for Use in Data, Signal, Control and Power Applications, UL 1977
CSA C22.2 No. 182.3-M1987

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Recognized Component Marks for the U.S. and Canada should be considered as being covered by UL's Recognition and Follow-Up Service and meeting the appropriate U.S. and Canadian requirements.

The UL Recognized Component Mark for the U.S. generally consists of the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark: , may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual recognitions. The UL Recognized Component Mark for Canada consists of the UL Recognized Mark for Canada: and the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Recognized Component Mark on the product.

William R. Carney

William R. Carney, Director, North American Certification Programs
UL LLC

D E S C R I P T I O N

PRODUCT COVERED:

USR, CNR Component Connectors - Drawer Connector Series, **AMPOWER Wave Crimp.**

GENERAL:

These devices are multipole plug and receptacle connectors employing contacts of the crimp, solder and press-fit termination type for use with printed circuit boards, half or full width copper flat copper cable, and/or ribbon cable.

These devices are 4-pole or 8-pole split plugs (crimp type) on 0.010 in or 0.020 in thick (split or full) width flat copper cable conductor; 4-pole or 8-pole split receptacle header; and mating **AMPOWER** plug contacts consisting of up to 21 poles.

USR - Indicates investigation to United States Standard, UL 1977, Second Edition.

CNR - Indicates investigation to Canadian National Standard, C22.2 No. 182.3-M1987.

TOOLING:

The plug contacts are factory assembled on flat copper cable using AMP Inc. **AMPOWER** wave crimped tooling, Model Nos. 768543 and 768544.

FLAT CABLE DESCRIPTIONS:

Description	Conductors	Thickness
Split (Half-Width)	2	0.010 in
Split (Half-Width)	2	0.020 in
Solid (Full-Width)	1	0.010 in
Solid (Full-Width)	1	0.020 in

Note: Solid is 1 in wide. Split is 1 in wide (two 7/16 in wide conductors with 1/16 in Tefzel insulation spacing.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

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

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

1. These devices should be used only where they will not interrupt the current.

2. The sense line contacts of these devices have been investigated for a current of 1 A carried by each pole. The max temperature rise did not exceed 30 degrees C.

The following cable constructions have been evaluated at the tabulated currents with a max temperature rise that did not exceed 30 degrees C.

Cable Construction	Current Rating
0.010 in Full, Layered	62 A
0.010 in Full, Separated	70 A
0.010 in Split, Layered	31 A
0.010 in Split, Separated	35 A
0.020 in Full, Layered	75 A
0.020 in Full, Separated	85 A
0.020 in Split, Layered	37 A
0.020 in Split, Separated	42 A

Other devices have not been tested for current-carrying capability.

3. The suitability of the mounting means shall be determined in the end-use.

4. The placement of these devices within the equipment enclosure should be such that spacings between the live parts and the equipment are suitable for the particular application.

5. The suitability of the min 1.3 mm (0.050 in) spacings between live parts of opposite polarity (including adjacent poles) and between live parts and exposed dead-metal parts shall be determined in the end-use.

6. The electrical and mechanical contact between the connector and the printed circuit board is to be judged in the end-use equipment.

7. The factory assembled contacts have been investigated for the following flat cable ranges and max tensile forces.

Cable Range	Tensile Force
0.010 in	92 lbs
0.020 in	150 lbs

8. The suitability of use of flat cable conductor of other styles or dimensions shall be determined in the end-use. There should be a 0.25 in air space between all flat cable conductors.

9. These connectors have been tested in combination with Recognized Component appliance wiring material (AVLV2) Tefzel insulated copper conductor *rated 300 V, 150 degrees C max in 0.010 in and 0.020 in thick, solid (1-conductor) and split (2-conductor) sizes.

10. The suitability of the insulating materials used in the molded bodies shall be judged in the end-use equipment.

11. The operating temperature of these devices should not exceed the temperature ratings of the insulating materials. These materials may be used interchangeably at a max temperature of 120 degrees C.

12. The transition assembly contacts and the Right Angle Plug contacts have been investigated for a current rating of 32 A with a maximum temperature rise of 30°C.

13. The Pin and Right Angled Socket Assemblies have been investigated for a current rating of 13 A with maximum temperature rise of 16°C.