

## **Excellent Integrated System Limited**

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# PRODUCT SPECIFICATION

## APPLIANCE APPLICATIONS

### 1.0 SCOPE

This product specification covers 3.18/(.125") X 0.51/(.020") flat blade type connectors in wire-to-wire, wire-to-board, and wire-to-“device” type connections. Two types of connectors are addressed:

- (1) standard – 7.50 mm (.295") centerline spacing series, and
- (2) custom connector housings.

### 2.0 PRODUCT DESCRIPTION

The products described herein are useful in home appliances such as clothes washers, dryers, dish washers, and refrigerators. The terminals have integral secondary locks that, when activated (optional), substantially improve their locking reliability, and virtually eliminate terminal “back-outs.” These connectors have long “through air” and “over surface” spacings to resist moisture and other pollutants that are present in appliances. The header assemblies are compatible with surface mount soldering processes.

The terminals crimp to wire insulation with a maximum 4.57 mm (.180") outside diameter, and accommodate standard power cord insulation as well.

The female terminal is fabricated from tin plated C26000. The male tab crimp terminal is fabricated from bare, un-plated C26000. The header terminal is fabricated from tin plated C26000. The male terminals are 3.18/(.125") X 0.51/(.020") tabs that are designed within the limits of the ANSI/NEMA Standards Publication / No. DC 2-1982. The terminations to #18, #16, and #14 AWG wires are accommodated as single crimps. Additionally, #18 AWG wire, UL 1015 only, is accommodated as a double crimp. This is a power connector, but it can be used as a dry circuit connector, too.

(1) Standard – 7.50 mm (.295") Centerline Spacing Series:

The plug and receptacle housings are molded from 66 nylon in its natural color, translucent white, unless otherwise indicated. The header housings are molded from glass filled 46 nylon in a black color. Also, the flammability classification for each housing material is listed below:

| <u>PRODUCT NAME:</u>                          | <u>MATERIAL NUMBER:</u> |
|---|-------------------------|
| PLUG HOUSING, 2 CIRCUIT (UL94V-2), NATURAL    | 43180-1002              |
| PLUG HOUSING, 2 CIRCUIT (UL94V-2), RED        | 43180-3002              |
| PLUG HOUSING, 3 CIRCUIT (UL94V-2), NATURAL    | 43180-1003              |
| PLUG HOUSING, 3 CIRCUIT (UL94V-2), RED        | 43180-3003              |
| PLUG HOUSING, 3 CIRCUIT (UL94V-2), BLUE       | 43180-4003              |
| PLUG HOUSING, 4 CIRCUIT (UL94V-2)             | X-43180-1004            |
| PLUG HOUSING, 5 CIRCUIT (UL94V-2)             | X-43180-1005            |
| PLUG HOUSING, 6 CIRCUIT (UL94V-2)             | X-43180-1006            |
| PANEL MOUNT PLUG HOUSING, 2 CIRCUIT (UL94V-2) | X-43384-1002            |
| PANEL MOUNT PLUG HOUSING, 3 CIRCUIT (UL94V-2) | 43384-1003              |
| PANEL MOUNT PLUG HOUSING, 4 CIRCUIT (UL94V-2) | X-43384-1004            |
| PANEL MOUNT PLUG HOUSING, 5 CIRCUIT (UL94V-2) | X-43384-1005            |
| PANEL MOUNT PLUG HOUSING, 6 CIRCUIT (UL94V-2) | X-43384-1006            |

| <u>REVISION:</u>  | <u>ECR/ECN INFORMATION:</u>                           | <u>TITLE:</u>   | <u>SHEET No.</u>    |
|---|---|---|---------------------|
| <b>4</b>  | <u>EC No:</u> UCP2005-2735<br><u>DATE:</u> 06/07/2005 | <b>PRODUCT SPECIFICATION<br/>APPLIANCE APPLICATIONS<br/>3.18/(.125") X 0.51/(.020") FLAT BLADE SYSTEM-TPA</b> | <b>1 of 8</b>       |
| <u>DOCUMENT NUMBER:</u>                                 | <u>CREATED / REVISED BY:</u>                          | <u>CHECKED BY:</u>  | <u>APPROVED BY:</u> |
| <b>PSX-43335-9999</b>                                   | <b>J.LOWE</b>   | <b>A.DERR</b>   | <b>F.SMITH</b>      |
| <i>TEMPLATE FILENAME: PRODUCT_SPEC[SIZE_A](V.1).DOC</i> |   |   |                     |



# PRODUCT SPECIFICATION

## 2.0 PRODUCT DESCRIPTION (CONTINUED):

| <u>PRODUCT NAME:</u>                              | <u>MATERIAL NUMBER:</u> |
|---|-------------------------|
| RECEPTACLE HOUSING, 2 CIRCUIT (UL94V-2), NATURAL  | 43335-1002              |
| RECEPTACLE HOUSING, 2 CIRCUIT (UL94V-2), BLACK    | 43335-2002              |
| RECEPTACLE HOUSING, 2 CIRCUIT (UL94V-2), RED      | 43335-3002              |
| RECEPTACLE HOUSING, 3 CIRCUIT (UL94V-2), NATURAL  | 43335-1003              |
| RECEPTACLE HOUSING, 3 CIRCUIT (UL94V-2), BLACK    | 43335-2003              |
| RECEPTACLE HOUSING, 3 CIRCUIT (UL94V-2), RED      | 43335-3003              |
| RECEPTACLE HOUSING, 3 CIRCUIT (UL94V-2), BLUE     | 43335-4003              |
| RECEPTACLE HOUSING, 4 CIRCUIT (UL94V-2)           | X-43335-1004            |
| RECEPTACLE HOUSING, 5 CIRCUIT (UL94V-2)           | X-43335-1005            |
| RECEPTACLE HOUSING, 6 CIRCUIT (UL94V-2)           | X-43335-1006            |
| HEADER ASSEMBLY, 2 CIRCUIT, VERTICAL (UL94V-0)    | SEE SDA-43160-****      |
| HEADER ASSEMBLY, 3 CIRCUIT, VERTICAL (UL94V-0)    | SEE SDA-43160-****      |
| HEADER ASSEMBLY, 4 CIRCUIT, VERTICAL (UL94V-0)    | SEE SDA-43160-****      |
| HEADER ASSEMBLY, 5 CIRCUIT, VERTICAL (UL94V-0)    | SEE SDA-43160-****      |
| HEADER ASSEMBLY, 6 CIRCUIT, VERTICAL (UL94V-0)    | SEE SDA-43160-****      |
| HEADER ASSEMBLY, 2 CIRCUIT, RIGHT ANGLE (UL94V-0) | SEE SDA-43160-****      |
| HEADER ASSEMBLY, 3 CIRCUIT, RIGHT ANGLE (UL94V-0) | SEE SDA-43160-****      |
| HEADER ASSEMBLY, 4 CIRCUIT, RIGHT ANGLE (UL94V-0) | SEE SDA-43160-****      |
| HEADER ASSEMBLY, 5 CIRCUIT, RIGHT ANGLE (UL94V-0) | SEE SDA-43160-****      |
| HEADER ASSEMBLY, 6 CIRCUIT, RIGHT ANGLE (UL94V-0) | SEE SDA-43160-****      |
| MALE TAB CRIMP TERMINAL, SMALL                    | 43178-1001              |
| MALE TAB CRIMP TERMINAL, LARGE                    | 43178-2001              |
| MALE TAB CRIMP TERMINAL, SIDE/SIDE DOUBLE CRIMPS  | 43178-3001              |
| FEMALE CRIMP TERMINAL, SMALL                      | 43375-0001              |
| FEMALE CRIMP TERMINAL, LARGE                      | 43375-1001              |

### (2) Custom Connector Housings:

These connector housings are molded from 66 nylon in its natural color, translucent white, unless otherwise indicated. The flammability classification for each connector housing listed below is UL94V-2

| <u>PRODUCT NAME:</u>  | <u>MATERIAL NUMBER:</u> |
|---|-------------------------|
| 3 CIR. PLUG HOUSING (SPECIAL POLARIZATION – COLOR = RED)      | 43180-0013              |
| 3 CIR. PLUG HOUSING (SPECIAL POLARIZATION – COLOR = BLACK)    | 43180-0023              |
| 6 CIRCUIT SWITCH HOUSING (UL94V-2)                            | 43168-1006              |
| 24 CIRCUIT APPLIANCE TIMER HOUSING (UL94V-2)                  | 43275-1024              |
| 3 CIRCUIT SWITCH HOUSING (UL94V-2)                            | 43301-1003              |
| 24 CIR. APPLIANCE TIMER HOUSING (UL94V-2 – COLOR = BLACK)     | 43796-1024              |
| 3 CIR. 7.50 mm HOUSING (CENTER CIRCUIT IS VOIDED)             | 43335-1103              |
| 3 CIR. 7.50 mm HOUSING (SPECIAL POLARIZATION – COLOR = RED)   | 43335-3013              |
| 3 CIR. 7.50 mm HOUSING (SPECIAL POLARIZATION – COLOR = BLUE)  | 43335-4023              |
| 3 CIR. 7.50 mm HOUSING (SPECIAL POLARIZATION – COLOR = BLACK) | 43335-5023              |

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|-------------------------|---|------------------------------|---|---------------------|
| <b>4</b>                | <u>EC No:</u> UCP2005-2735<br><u>DATE:</u> 06/07/2005 |                              | <b>APPLIANCE APPLICATIONS</b><br><b>3.18/(.125) X 0.51/(.020) FLAT BLADE SYSTEM-TPA</b> | <b>2 of 8</b>       |
| <u>DOCUMENT NUMBER:</u> |   | <u>CREATED / REVISED BY:</u> | <u>CHECKED BY:</u>  | <u>APPROVED BY:</u> |
| <b>PSX-43335-9999</b>   |   | <b>J.LOWE</b>                | <b>A.DERR</b>   | <b>F.SMITH</b>      |



# PRODUCT SPECIFICATION

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

SEE PRODUCT DRAWING

## 4.0 RATINGS

### 4.1 VOLTAGE

600 volts

Also, 1000 volts, mated, for the standard 7.50 mm (.295") centerline types (wire to wire only)  
 Note that this value reverts to 600 volts when the system is not mated; before disconnecting a connector used with a higher potential than 600 volts, the effected leads must be discharged to either ground or to the chassis.

### 4.2 CURRENT AND APPLICABLE WIRES

#### WIRE SIZE – TYPE

#### CURRENT LEVEL

18 AWG – UL 1015

12 AMPERES MAXIMUM

16 AWG – UL 1015

TBD AMPERES MAXIMUM

14 AWG – UL 1015

15 AMPERES MAXIMUM

### 4.3 TEMPERATURE

-40° centigrade to +75° centigrade

## 5.0 PERFORMANCE

### 5.1 ELECTRICAL REQUIREMENTS

| <u>ITEM</u>                     | <u>TEST CONDITION</u>  | <u>REQUIREMENT</u>         |
|---------------------------------|--|----------------------------|
| VOLTAGE DROP                    | THE VOLTAGE DIFFERENCE BETWEEN AN UNINTERRUPTED 6" LENGTH OF #18 AWG (UL1015) WIRE, AND THE SAME 6" LENGTH THAT IS INTERRUPTED BY TWO CRIMPED TERMINALS THAT ARE MATED AND HAVE 12.0 AMPERES CURRENT FLOWING. (SEE SHEETS 6 & 7) | 0.120 VOLTS MAX (INITIAL)  |
| INSULATION RESISTANCE           | MATE CONNECTORS WITH A VOLTAGE OF 500 VDC BETWEEN ADJACENT TERMINALS AND BETWEEN TERMINALS AND GROUND.   | 1000 MEGOHMS MIN (INITIAL) |
| DIELECTRIC WITHSTANDING VOLTAGE | MATE CONNECTORS WITH A VOLTAGE OF 5000 VAC FOR 1 MINUTE  | NO BREAKDOWN               |
| CONTACT RESISTANCE (LOW LEVEL)  | MATE CONNECTORS WITH A MAXIMUM VOLTAGE OF 20 MV AND A CURRENT OF 100 MA.   | 10.0 MOHMS MAX             |

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## PRODUCT SPECIFICATION

### 5.2 MECHANICAL REQUIREMENTS

| <u>ITEM</u>                         | <u>TEST CONDITION</u>  | <u>REQUIREMENT</u>   |   |
|-------------------------------------|--|--|---|
| CONNECTOR MATING & UN-MATING FORCE  | INSERT AND WITHDRAW CONNECTORS AT A RATE OF 25 +/- 6 mm (1 +/- .250 INCHES) PER MINUTE   | MAX INSERT (3.0 LBS)   | MIN WITHDRAW (0.5 LBS) PER TERMINAL     |
| TERMINAL RETENTION FORCE IN HOUSING | AXIAL PULL OUT FORCE ON THE TERMINAL IN THE HOUSING AT A RATE OF 25 +/- 6 mm (1 +/- .25 INCHES) PER MINUTE (RECEPTACLE TERMINAL)     | 20 LBS MIN (TPA NOT ACTIVATED)   | 25 LBS MIN (WITH TPA ACTIVATED)         |
| TERMINAL RETENTION FORCE IN HOUSING | AXIAL PULL OUT FORCE ON THE TERMINAL IN THE HOUSING AT A RATE OF 25 +/- 6 mm (1 +/- .25 INCHES) PER MINUTE (MALE TAB CRIMP TERMINAL) | 30 LBS MIN (TPA NOT ACTIVATED)   | 30 LBS MIN (WITH TPA ACTIVATED)         |
| VIBRATION                           | AMPLITUDE: 1.50 mm (.060 IN.) PEAK-TO-PEAK<br>SWEEP: 10-55-10 HZ IN ONE MINUTE<br>DURATION: 2 HOURS IN EACH X-Y-Z AXIS               | CONTACT RESISTANCE<br>10.0 MOHMS MAX<br><br>NO DISCONTINUITY GREATER THAN ONE MICROSECOND  |   |
| MECHANICAL SHOCK                    | 50 G IN THE FORM OF THREE SAW TOOTH WAVEFORM SHOCKS IN EACH X-Y-Z AXIS.  | CONTACT RESISTANCE:<br>10.0 MOHMS MAX<br><br>NO DISCONTINUITY GREATER THAN ONE MICROSECOND |   |
| WIRE PULL OUT FORCE (AXIAL)         | APPLY AN AXIAL PULL OUT FORCE ON THE WIRE AT A RATE OF 25 +/- 6 mm (1 +/- .250 INCHES) PER MIN.                                      | AWG<br>14<br>16<br>18  | MIN FORCE<br>50 LBS<br>45 LBS<br>30 LBS |
| TERMINAL INSERTION FORCE            | APPLY AN AXIAL INSERTION FORCE ON THE WIRE AT A RATE OF 25 +/- 6 mm (1 +/- .250 INCHES) PER MIN.                                     |  | 1.5 LBS MAX                             |

|  |  |  |                                       |
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# PRODUCT SPECIFICATION

## 5.3 ENVIRONMENTAL REQUIREMENTS

| <u>ITEM</u>             | <u>TEST CONDITION</u>  |                      | <u>REQUIREMENT</u>                      |
|-------------------------|--|----------------------|---|
| THERMAL SHOCK           | MATED CONNECTORS TO BE EXPOSED TO 25 CYCLES OF:  |                      | APPEARANCE: NO DAMAGE                   |
|                         | TEMPERATURE (DEGREES C)  | DURATION (MIN.)      | CONTACT RESISTANCE: 10.0 MOHMS MAX      |
|                         | -55 +0/-3<br>+85 +3/-0   | 30 +3/-0<br>30 +3/-0 |   |
| HUMIDITY (STEADY STATE) | MATED CONNECTORS TO BE EXPOSED TO A TEMPERATURE OF 85 +/- 2 DEGREES C WITH A RELATIVE HUMIDITY OF 90 TO 95% FOR 96 HOURS.  |                      | APPEARANCE: NO DAMAGE                   |
|                         |  |                      | CONTACT RESISTANCE: 10.0 MOHMS MAX      |
|                         |  |                      | DIELECTRIC STRENGTH: NO BREAKDOWN       |
|                         |  |                      | INSULATION RESISTANCE: 1000 MEGOHMS MIN |
| HUMIDITY (CYCLIC)       | MATED CONNECTORS TO BE EXPOSED TO TEMPERATURE/HUMIDITY CYCLING BETWEEN +25 <sup>0</sup> C AND +65 <sup>0</sup> C AT 95% RH, -10 <sup>0</sup> C WITH HUMIDITY NOT CONTROLLED.<br>(MIL-STD-1344A METHOD 1002.2)<br>(TYPE II) |                      | APPEARANCE: NO DAMAGE                   |
|                         |  |                      | CONTACT RESISTANCE: 10.0 MOHMS MAX      |
|                         |  |                      | DIELECTRIC STRENGTH: NO BREAKDOWN       |
|                         |  |                      | INSULATION RESISTANCE: 100 MEGOHMS MIN  |

## 6.0 PACKAGING

SEE PRODUCT DRAWING

## 7.0 GAGES AND FIXTURES

PICTORIALS & SPECIFICATIONS ARE PROVIDED AS NEEDED

|   |  |  |                                       |
|---|--|--|---------------------------------------|
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| <u>DOCUMENT NUMBER:</u><br><b>PSX-43335-9999</b>        | <u>CREATED / REVISED BY:</u><br><b>J.LOWE</b>  | <u>CHECKED BY:</u><br><b>A.DERR</b>  | <u>APPROVED BY:</u><br><b>F.SMITH</b> |
| <i>TEMPLATE FILENAME: PRODUCT_SPEC[SIZE_A](V.1).DOC</i> |  |  |                                       |



# PRODUCT SPECIFICATION

## 8.0 OTHER INFORMATION

Voltage Drop, and Cycling Test:

Do this test with mated housings (43335-1003 and 43180-1003) both fully loaded with their respective terminals (43375-0001 and 43178-0001). Each terminal shall be crimped to a twelve inch length of #18 AWG, UL1015 wire with white insulation.

The mated connector housings shall lie latch side up and flat atop the test bench, lined up, side by side, and spaced 76.2 mm (3.0") apart. The wires shall be lifted 3.18 mm – 12.70 mm (.125" - .500") above the test bench. Heat sinks (eg. metal nuts and bolts), and heat sources are to be kept far enough away from the test samples so that the connector temperatures are not effected. The wires are to be connected end to end in daisy chain form with the stripped conductor ends twisted together and soldered. See figure #2.

For each mated pair of connector housings there are three wire taps. The wires used in the center position of the mated connector housings (circuit #2) are to be stripped for the voltage taps. See figure #1.

Cycle Test: The mated connector assemblies to be subjected to a 500 hour cycling test comprised of a 45 minute "on" period and 15 minute "off" period. During each "on" period 12.00 +/-0.10 amperes shall be present in the wires of the mated connector housings being tested. During each "off" period, 0.00 amperes to be present (ie. shut off). The voltage data is to be recorded during the last 10 minutes of the "on" period of the specified cycle.

The criterion, voltage drop, is the arithmetic difference between the voltage across the termination ("A"), and the voltage across the uninterrupted 6" length of wire ("B"). The voltage data to be recorded every twenty four cycles, and at the five hundredth cycle.

Requirement: 0.120 volts maximum throughout the test.

|  |  |  |                                       |
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## PRODUCT SPECIFICATION

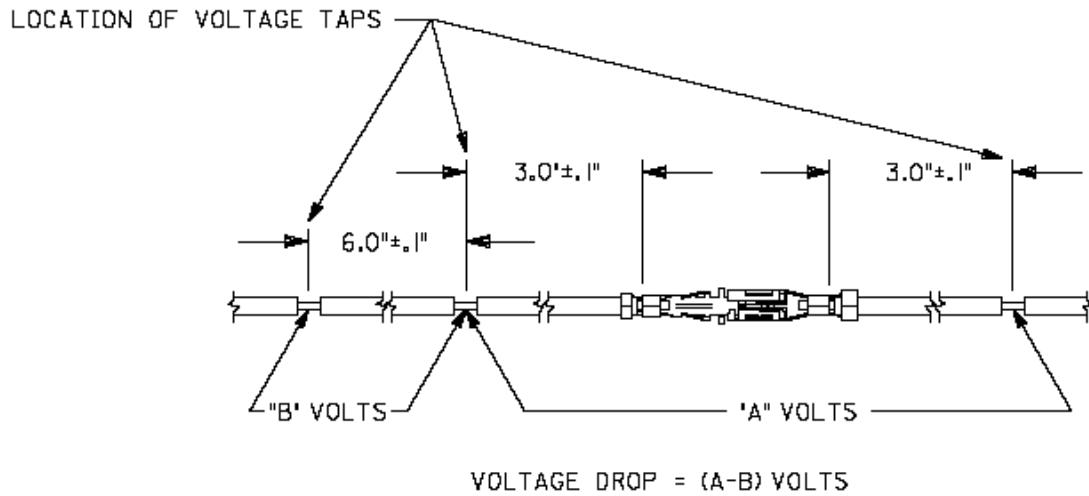


FIGURE 1  
(FULL SCALE)  
(APPLIES TO THE CENTER CIRCUIT LOCATION ONLY)

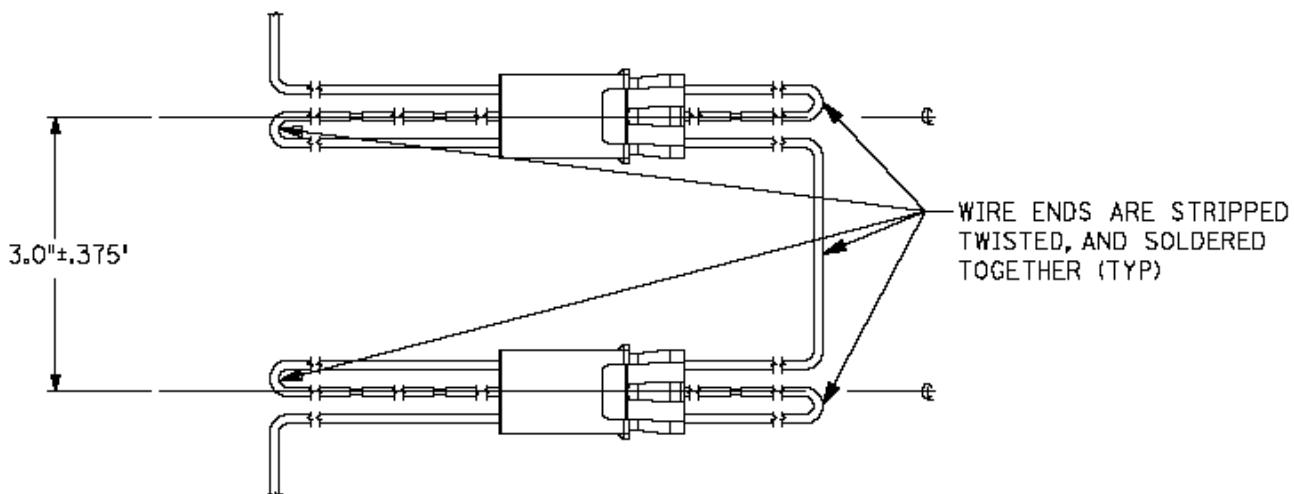


FIGURE 2  
(ONE HALF SCALE)

| REVISION:             | ECR/ECN INFORMATION:                                  | TITLE:  | SHEET No.      |
|-----------------------|---|---|----------------|
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| DOCUMENT NUMBER:      | CREATED / REVISED BY:                                 | CHECKED BY:   | APPROVED BY:   |
| <b>PSX-43335-9999</b> | <b>J.LOWE</b>   | <b>A.DERR</b>   | <b>F.SMITH</b> |



## PRODUCT SPECIFICATION

| LTR | REVISIONS                                       |
|-----|---|
| “1” | “X” RELEASE PER ECN# U50791                     |
| “2” | REVISED PER ECN# U81258                         |
| “3” | REVISED PER ECN# U81679                         |
| 4   | ADDED P/N, CONVERTED TO WORD; ECN: UCP2005-2735 |
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