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File No: E213419
Project No: 14SR67680
PD No: 14M04541
Type: R
PO Number:

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
2013/12/26	1	7	Revised Description Page(s) 1,2	2014/01/30
2013/12/26	1	7	New Test Record 2	2014/01/30
2013/12/26	1	7	Revised Test Record 1-1	2014/01/30

Inspections at your plant will be conducted under the supervision of SUNGMIN CHO, UL INSPECTION CENTER SEOUL, UL KOREA LTD, STAR TOWER, 33RD FL, KANGNAM-GU, 737 YEOKSAM-DONG, SEOUL, Korea, Republic of, 135-984., PHONE: 2-2009-9000, FAX: 2-2009-9485, EMAIL: sungmin.cho@kr.ul.com

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://www.ul.com/global/eng/pages/corporate/contactus.

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SCL File

UL INSPECTION CENTER 747

DESCRIPTION

PRODUCT COVERED:

USR, CNR - Thermistor-type devices, Positive Temperature Coefficient (PTC) Heater Sub-Assembly, Model HPHJ09150SD02R1A03#. See electrical ratings for model details.

EXPLANATION OF RATING TABLE:

Definitions		Explanation of use
Class		Calibration Class per UL 1434, Table 11.1.
Iin		The peak current measured following energization at rated voltage and at 25°C or manufacturer's specified value.
Iss		The current measured after a thermistor's temperature stabilizes in still air at ambient specified by the manufacturer, while connected to rated voltage and while operating in its high-resistance state for PTC thermistors.
R25		The rated resistance at a temperature specified by the manufacturer for Rx or at 25 ±2°C (77 ±3.6°F) for R25.
Ts		The temperature of the surface of a thermistor while the thermistor is energized under normal operating conditions.
Vmax		Maximum voltage at rated current (Imax).
Vr		The input voltage of a thermistor as declared by the manufacturer.

RATINGS:

TABLE 1

Positive Temperature Coefficient (PTC) Heater

Model	Vr dc	Vmax dc	Iin (A)	Iss (mA)	R25 (Ω)	Tsw (°C)	Ts (°C)	Class
HPHJ09150SD02R1A03#	28.0	35.0	1.5 Max	30 Max	15.0Ω **±50%**	90±5	120 Max	C_1

All ratings are based on a declared ambient temperature of 25°C

Remark : "#" is a special number which is subject to be changed according to customer desire.

Nomenclature

HP	H	J	09	150	S	D	02	R1	A03#
I	II	III	IV	V	VI	VII	VIII	IX	X

I Hiel PTC

II Heater

III Element Type – Lapping Type

IV Cure Temperature – 90°C

V Resistance (R_{25}) - **15Ω**

VI Tolerance - Special

VII Shape – Disk

IX Dimension (mm) – Disk Φ2.1

X Customer Specification not affecting the construction and performance controlled by UL. **Remark : "#" is a special number which is subject to be changed according to customer desire.**

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TEST RECORD NO. 1

SAMPLES:

A sample of the PTC Heater Subassembly (pellet) as indicated below and constructed as described herein, was submitted by the manufacturer for examination and test.

HPHJ09150SD02R1A03# rated 28Vdc, 35Vdc max, 1.5A Iin max, 30mA Iss max, R25 **15Ω±50%**, Ts 120°C max, Tsw 90°C±5°Cs max.

GENERAL:

Test results relate only to the items tested.

The following tests were conducted.

Resistance At 25°C (R_{25}):	-
Calibration Tests: PTC Heaters	Section 11
Overload And Endurance Test: PTC Heater	Section 14, 15
Aging Test: PTC Heater	Section 12
Heat-Cold-Humidity Cycling Test:	Section 13
Cold Operational Cycling Test: PTC Heater	Section 16
Thermal Runaway Test: PTC Heater	Section 19
Thermal Endurance: PTC Heater	CSA 22.2 No. 72-1984, Clause 6.8

The test methods and results of the above tests have been reviewed and found in accordance with the requirements in the Standards noted below.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standard noted below and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Revision Date
UL 1434	Thermistor-Type Devices	1st	2002-08-30
CSA C22.2 No. 72-10	Heater Elements	3rd	2010-Feb.

TEST RECORD NO. 2

SAMPLES:

No samples were submitted and no tests were required to correct the typographical error in Test Record No. 1 where the R25 value was indicated as 15Ω±5% and should have been specified as 15Ω±50%.

GENERAL:

Test results relate only to the items tested.

The following tests were previously conducted.

Test	File Reference	Report Date	Test Record No.
All	E213419	2013-12-26	1

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standard noted below and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Revision Date
UL 1434	Thermistor-Type Devices	1st	2002-08-30
CSA C22.2 No. 72-10	Heater Elements	3rd	2010-Feb.

Report by:

WENDY MACBAIN
Engineering Assoc Staff