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IP Rating Compliance Test Report

AS 60529: 2004 (IP2X Requirements)

Report Number: TR2276A



**Dara Switchboards
Tee Off Box Enclosure
(Dim. 500mm H x 500mm W x 250mm D)**

The results detailed in this test report relate only to the specific sample/s tested. It is the Manufacturer's responsibility to ensure that all production units are manufactured with equivalent EMC characteristics. This report is not to be reproduced except in full, without written approval from Compliance Engineering Pty Ltd.



COMPLIANCE CERTIFICATE

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Device: Tee Off Box Enclosure
 Dim. 500mm H x 500mm W x 250mm D

Reference Standard: AS 60529: 2004
 Degrees of protection provided by enclosures (IP Code)

Summary Result: IP2X requirements
 12 mm x 80 mm jointed finger test (Table 2 & section 12.2)
 12.5 mm sphere test (Table 2 & section 13.2) **Complied
Complied**

Test Date(s): 23rd to October 2017

Tests Performed by: Jeremy Poynter
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The Tee Off Box Enclosure (Dim. 500mm H x 500mm W x 250mm D) complied with the IP2X requirements of AS 60529: 2004: Degrees of protection provide by enclosures (IP Code)

		10 th November 2017
Prepared By: Jeremy Poynter Test Engineer Compliance Engineering Pty Ltd	Approved By: Andrew Burden Technical Manager Compliance Engineering Pty Ltd	Date

IP Rating Compliance Test Report

1. INTRODUCTION

Foreign object and water ingress protection measurements were performed on a Tee Off Box Enclosure (Dim. 500mm H x 500mm W x 250mm D) in accordance with the IP2X requirements detailed in AS 60529: 2004.

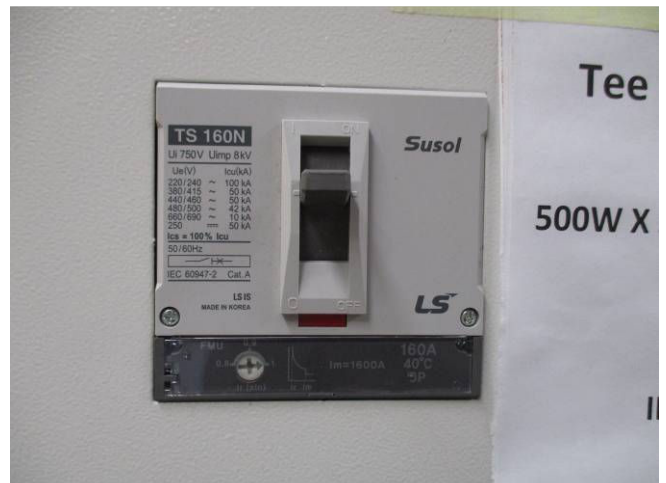
2. RESULTS SUMMARY

IP2X requirements:

12 mm x 80 mm jointed finger test (Table 2 & section 12.2)	Complied
12.5 mm sphere test (Table 2 & section 13.2)	Complied

3. TEST SAMPLE

The test samples are described as follows:
Tee Off Box Enclosure
(Dim. 500mm H x 500mm W x 250mm D)



4. MODIFICATIONS

No modifications were performed on the above sample by Compliance Engineering.

5. CONFIGURATION

Unless otherwise specified in a relevant product standard, the test samples for each test shall be in a clean and new condition, with all parts in place and mounted in the manner stated by the manufacture.

6. DEGREES OF PROTECTION

First Numeral Requirements

The first characteristic numeral indicates that the enclosure provides protection of persons against access to hazardous parts by preventing or limiting the ingress of a part of the human body or an object held by a person; and simultaneously the enclosure provides protection of equipment against the ingress of solid foreign objects.

AS 60529 - Table 1 Protection against access to hazardous parts			
First Character	Description	Ingress Test	Section
1	Prevent access to back of hand	No entry by 50 mm sphere probe	12.2
2	Prevent access to a finger	No entry by 12 mm test finger	12.2
3	Prevent access to a tool	No entry by 2.5 mm probe	12.2
4	Prevent access to a wire	No entry by 1 mm probe	12.2
5	Prevent access to a wire	No entry by 1 mm probe	12.2
6	Prevent access to a wire	No entry by 1 mm probe	12.2

AS 60529 - Table 2 Protection against solid foreign objects			
First Character	Description	Ingress Test	Section
1	Prevent access to 50 mm sphere	No entry by 50 mm sphere probe	13.2
2	No access to 12.5 mm sphere	No entry by 12.5 mm sphere probe	13.2
3	No access to 2.5 mm rod	No entry by 2.5 mm probe	13.2
4	No access to 1 mm rod	No entry by 1 mm probe	13.2
5	Dust protected	Minor dust ingress only	13.4 & 13.5
6	Dust Tight	No ingress of dust	13.4 & 13.6

Second Numeral Requirements

The second characteristic numeral indicates the degree of protection provided by enclosures with respect to harmful effects on the equipment due to the ingress of water.

AS 60529 - Table 3 Protection against water			
Second Character	Description	Ingress Test	Section
1	Vertical water drops	No harmful effect	14.2.1
2	Water drops, 15° EUT angle	No harmful effect at 15° to drops	14.2.2
3	Spraying water	No harmful effect to 60° spray	14.2.3
4	Splashing water	No harmful effect by splashed water	14.2.4
5	Water jet	No harmful effect to water jet	14.2.5
6	Powerful water jet	No harmful effect to powerful water jet	14.2.6
7	Temporary immersion	No harmful effect to water immersion	14.2.7
8	Continuous immersion	No harmful effect to water immersion	14.2.8

7. ATMOSPHERIC CONDITIONS FOR WATER OR DUST TESTS

Unless otherwise specified in the relevant product standards, the tests should be carried out under the standard atmospheric conditions described in IEC 60068-1.

The recommended atmospheric conditions during the tests are as follows;

- Temperature range: 15 °C to 35 °C
- Relative humidity: 25 % to 75 %
- Air pressure: 86 kPa to 106 kPa (860 mbar to 1060 mbar)

8. PROTECTION AGAINST HAZARDOUS PARTS (IP 2X - FINGER)

8.1 REQUIREMENTS & PROCEDURE – 12 mm FINGER

The protection is satisfactory if there is adequate clearance is kept between the access probe and hazardous parts.

The following specifications are required;

- A jointed test finger 12.0 (-0.05) mm diameter with edges free from burrs.
- Test force of 10 N (±10%)

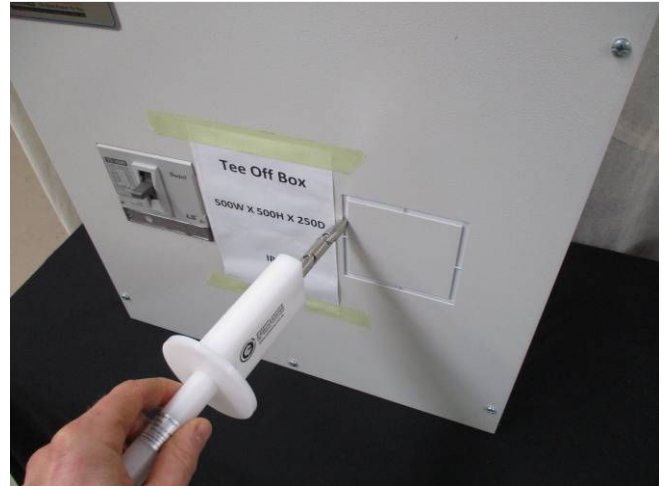
8.2 TEST EQUIPMENT

Inv	Equipment	Model No	Serial No	Cal Due
418	IEC 60529 Test Probe Set	AUTO A/B/C/D	AUTO1305280	N/A

N/A= Not Applicable

8.3 RESULTS

There were no openings large enough for the 12 mm finger to penetrate the enclosure.



Environmental Conditions: Temperature 16°C, Humidity 62% & Pressure 1022 mbar

8.4 ASSESSMENT

The Tee Off Box Enclosure (Dim. 500mm H x 500mm W x 250mm D) complies with the protection against access to hazardous parts (IP2X) as per item 2, table 5 of AS 60529: 2004.

9. PROTECTION AGAINST SOLID FOREIGN OBJECTS (IP 2X – 12.5 mm SPHERE)

9.1 REQUIREMENTS & PROCEDURE – 12.5 mm SPHERE

The protection is satisfactory if there is no entry of the test sphere.

The following specifications are required;

- A sphere 12.5 (+0.2) mm diameter with edges free from burrs.
- Test force of 30 N ($\pm 10\%$)

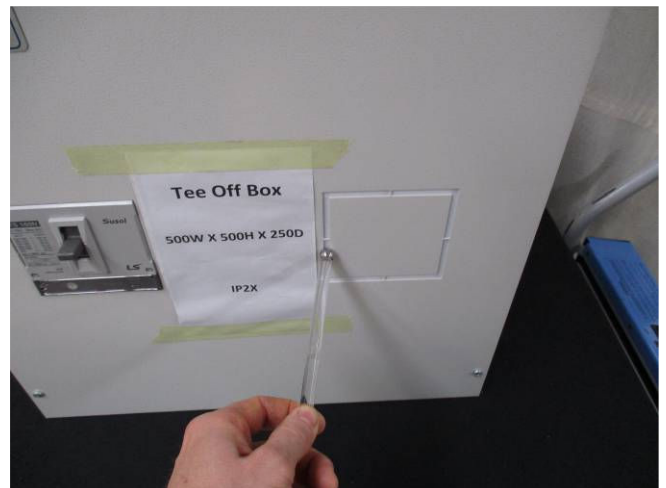
9.2 TEST EQUIPMENT

Inv	Equipment	Model No	Serial No	Cal Due
418	IEC 60529 Test Probe Set	AUTO A/B/C/D	AUTO1305280	N/A

N/A= Not Applicable

9.3 RESULTS

There were no openings large enough for the 12.5 mm sphere to penetrate the enclosure.



Environmental Conditions: Temperature 16°C, Humidity 62% & Pressure 1022 mbar

10. CONCLUSION

The Tee Off Box Enclosure (Dim. 500mm H x 500mm W x 250mm D) complies with the IP2X requirements of AS 60529: 2004, degrees of protection provided by enclosures (IP Code).