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Fire resistance test report

Test standard: Appendix A and B of AS/NZS 3013:2005

Test sponsor: TransTech Electronic Controls Pty Ltd

Product: BPG6-F junction box

Job number: FRT220346

Test date: 29 March 2023 Revision: R1.0

Warringtonfire: accredited for compliance with ISO/IEC 17025 – Testing

ilac-MRA NATA Accreditation No. 3277

Contents

1. Introduction

This report documents the findings of the fire resistance test of an electrical wiring system in accordance with appendix A and B of AS/NZS 3013:2005 and AS 1530.4:2014. The testing was done on 29 March 2023.

Warringtonfire performed the test at the request of the test sponsor listed in Table 1.

Table 1 Test sponsor details

Test sponsor	Address
TransTech Electronic Controls Pty Ltd	Unit 2/48 Dellamarta Road Wangara WA 6065 Australia

2. Test details

The cable was positioned in the cable tray – as shown in Figure 1. A junction box system was tested in one cable tray. The results for a junction box system are presented in this report.

The cable tray was made of 472 mm wide × 48 mm high × 0.7 mm thick steel. It was supported in the centre with a 42 mm × 42 mm × 2.5 mm thick U-steel section, which had two lengths of Ø10 mm threaded rod supported through the concrete slab on the unexposed side.

The cables protruded from the junction box were fixed to the cable tray with plastic cable ties.

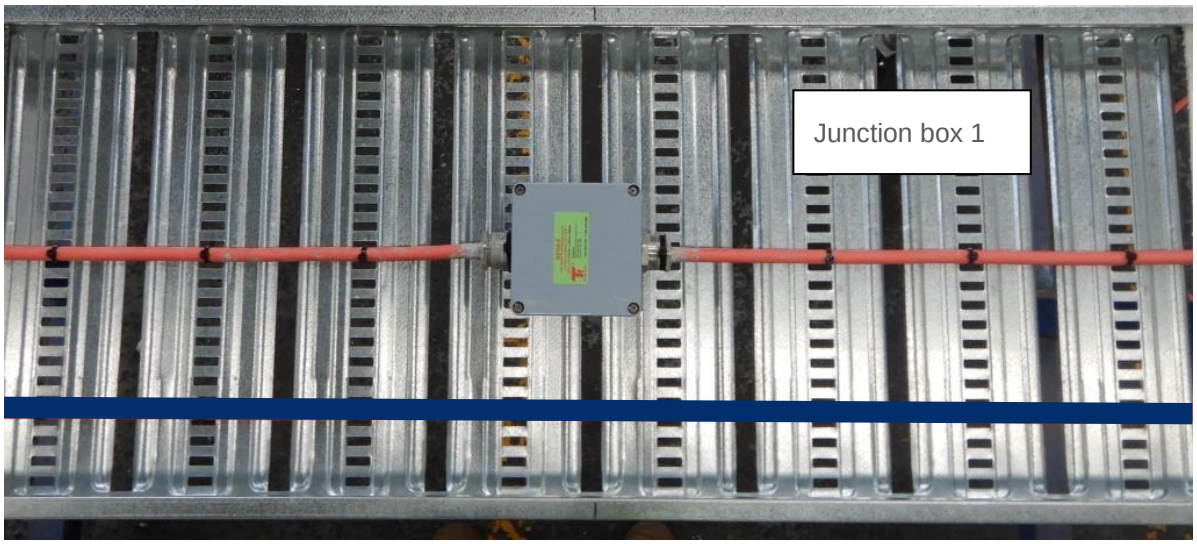

Figure 1 Positioning of junction box

3. Specimen description

Table 2 describes the product tested by Warringtonfire.

Table 3 lists the circuit designation for the cable.

Table 2 Specimen description

Item	Description
Product	ABTECH BPG6-F terminal junction box
Material	Glass reinforcement polyester (GRP)
Overall size	122 mm wide × 120 mm length × 90 mm high × 5.5 mm thick
Terminal reference	SSK0525KER
Terminal description	Ceramic feed thru terminals 4sq/mm
Terminal size	6.2 mm wide × 38 mm length × 48 mm high
Fire cable name	Electra cable 2019 Electric cable FRC3015E® 110° Cu/Mica/X-HF-110/HFS-110-TP 3c × 1.5 mm² + E 0.6/1 kV AS/CA 5009 LV F1RF N10519 resistant flexible cable WS52W to AS/NZS 3013
Cable glands reference	CMP SS316L 25 A2F M25
Cable glands description	Cable gland 25 mm thread
Cable glands material	Stainless steel
Cable glands reducer reference	CMP SS316L 737 DM2M35
Cable glands reducer description	Reducer 25 mm to 20 mm
Cable glands extra insulation	Ceramic insulation
Description	Extra ceramic insulation ring was inserted into the cable glands to provide extra protection.

Table 3 Circuit designation

Junction box	Core colour	Circuit no.
1	Red	1
	White	2
	Blue	3

4. Fire resistance test

The furnace temperature was controlled in accordance with AS/NZS 3013:2005. It was maintained within the prescribed limits of variance from the time/temperature curve specified in AS 1530.4:2014 for the duration of the test period.

The furnace pressure was measured at a position approximately 100 mm below the soffit of the specimen mounting slab. It was maintained at approximately 20 Pa above the laboratory atmospheric pressure for the duration of the test.

Figure 2 shows the measured furnace thermocouple temperature and pressure over time.

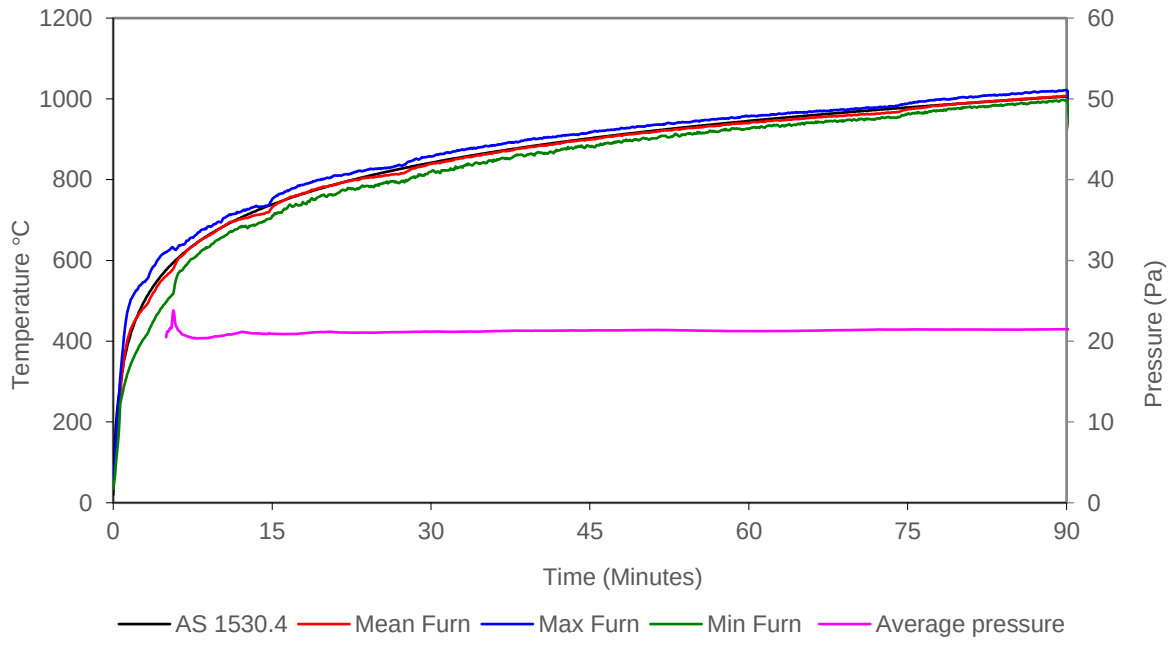

Figure 2 Furnace thermocouple temperature and pressure vs time

The electrical power cables were connected to a 240/415 V 3 phase electrical circuit integrity monitoring system. This monitoring system provided each electrical circuit with 240 volts through a circuit breaker, with an indication light and a resistive load to induce 0.25 A of current per circuit.

The fire resistance test was stopped at 90 minutes.

Table 4 includes observations from the fire resistance test.

Table 5 summarises the results the specimen achieved during the fire resistance test. The cable group is defined as in appendix A of AS/NZS 3013:2005

Table 4 Fire resistance test observations

Time		Observation
Min	Sec	
0	0	The fire resistance test started and lamps 01 to 03 were lit.
15	00	Electrical circuits 01 to 03 were intact and conducting the test current.
30	00	Electrical circuits 01 to 03 were intact and conducting the test current.
60	00	Electrical circuits 01 to 03 were intact and conducting the test current.
90	00	Electrical circuits 01 to 03 were intact and conducting the test current.
		Test stopped

Table 5 Fire resistance test results

Cable number	Cable group	Cable configuration	Circuit integrity
1	3	Single	90 minutes

5. Water spray test

The water spray test was conducted in accordance with appendix B of AS/NZS 3013:2005, using a ½" BSP male brass nozzle with a water spray cone of 90° which was positioned centrally, nominally

500 mm below the soffit of the specimen mounting slab. The test was done for 3 minutes – within 10 minutes after the completion of the fire resistance test.

Table 6 lists the observations from the water spray test.

Table 6 Water spray test observations

Time		Observation
Min	Sec	
92	35	Water spray test started and lamps 01 to 03 were lit.
95	35	Electrical circuits 01 to 03 were intact and conducting the test current.
		Test stopped

6. Wiring system classification

Table 7 summarises the classification achieved by the test specimen in accordance with appendix A and B of AS/NZS 3013:2005.

Table 7 Summary of cable classification in accordance with AS/NZS 3013:2005

Cable number	Cable group	Cable classification
1	2, 3 and 4	WS4XW

7. Application of test results

This report is based on the results of a fire resistance test performed by Warringtonfire. It does not provide an endorsement by Warringtonfire of the performance of the actual products supplied.

The conclusions in this test report relate to the configurations detailed in the report. They should not be applied to any other configuration or other cable construction or type.

The results of these tests may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all conditions.

The text in the paragraphs below has been taken from AS/NZS 3013:2005.

AS/NZS 3013:2005 applies only to the testing and classification of wiring system elements that are in all other respects safe and suitable for their intended use and comply with other relevant standards.

A wiring system is then assembled using the individual elements and a fire and mechanical performance classification for the assembled system is established.

The fire protection classification of a wiring system shall not be greater than the fire protection classification of its lowest classified element.

The mechanical protection classification of an assembled wiring system shall not be less than the mechanical protection classification of its highest classified element. For example, if a cable of low classification is protected by an enclosure of higher classification the assembled system is assigned the classification of the enclosure.

The use of wiring system elements tested in accordance with AS/NZS 3013:2005 may not be necessary where parts (or components) of building construction provide satisfactory protection against fire conditions and mechanical damage.

The degree of protection against fire conditions and mechanical damage required of a wiring system or its elements depends on the application. Appendix F of AS/NZS 3013:2005 describes methods of protecting wiring system elements against the fire conditions and mechanical damage for which testing may not be considered necessary.

Quality management

Revision	Date	Information about the report			
R1.0	17 April 2023	Description	Initial issue		
			Prepared by	Reviewed by	Authorised by
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