



## AUSTRALIAN RAIL TRACK CORPORATION

INFRASTRUCTURE, STRATEGY AND PERFORMANCE

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### Engineering Standards and Documents

The following recommendation, together with attached supporting documentation, has been considered by the ARTC Manager Standards on 24<sup>th</sup> September 2007.

#### *Documents:*

Ref No:	<b>08-08-10-077</b> Revised Systems & Equipment Approval
Subject:	'Elsafe' Transient Protection equipment
Dated:	6 <sup>th</sup> August 2007.

Prepared By: Arthur Haberlin, Signalling Engineer

Endorsed by: Trevor Moore, Signalling Standards Engineer

#### *Items Considered for Approval:*

Manufacturer:	Elsafe Australia
Product:	Overvoltage Protection equipment
Item Identification:	See item list Ref. No: <b>08-0708-058a</b>

The items in the form presented at the review date were approved for System & Equipment Approval to be used on all ARTC jurisdictions in accordance with the manufacturers published performance criteria and subject to the following.

#### *Relevant ARTC Specifications:*

Ref. No.	Title	Status	Date
SPS 02	Environmental Conditions	Issue 1 Revision 2	May '05
SC 06 01	Lightning and Surge Protection Requirements	Issue 1 Revision 0	March '05

### ***Specific Conditions of Approval:***

- i.** Termination modules 216600 shall be wired in series mode (as dual disconnection link).
- ii.** Earth screw on 216600 termination modules shall be tightened to ensure that edges of module bracket penetrate surface of the mounting rail.
- iii.** Maximum conductor size 6mm<sup>2</sup> per termination.
- iv.** For use in accordance with ARTC standard typical circuits SDS 25 (as modified to suit this equipment) only.
- v.** New circuit symbols showing the dual disconnection link and removable technical cassette form of the termination module (with associated earth connections as appropriate) shall be developed and approved for inclusion in ARTC standard SDS 25.
- vi.** Red identification flags should be used whenever a circuit is deliberately interrupted by the removal of a technical cassette.
- vii.** Only components from list **08-0708-058a** may be utilised in accordance with these general conditions and any individually annotated against items on the list.
- viii.** Ongoing quality audits of the manufacturers production and distribution systems to confirm procedures are adequate to maintain ARTC quality requirements shall be undertaken

### ***Certificate Issued to:***

Elsafe Australia Pty. Ltd.  
Suite 8, 36 Agnes Street  
Fortitude Valley  
Queensland 4006

A general condition of approval is that the supplier maintains a quality assurance system generally in accordance with ISO9001 and ARTC is advised on a 12 monthly basis that it remains current. ARTC reserves the right to conduct its own audit of the manufacture and supply of these components to AS 19011:2003.

Any subsequent change to the design, materials or manufacturing process is not covered by this approval.

Approved for use in the ARTC.



John Furness

**APPROVAL No:** **08-08-10-077**

Manager Standards

Approval Date: **24th September 2007**



**AUSTRALIAN RAIL TRACK CORPORATION LTD**

**Ref No: 08-0708- 058a**

**Date: 20<sup>th</sup> August 2007**

**System & Equipment Approval**

**Subject: ‘Elsafe’ Surge Protection Cassettes & Termination modules**

The following lists the individual types (by catalogue number) of Surge Protection Cassettes & Termination Modules manufactured by Elsafe Australia Pty. Ltd. (Elsafe) which are approved for use in signalling circuits on ARTC infrastructure under System & Equipment Approval Certificate **08-08-10-077** subject only to any conditions shown on that Certificate and the Conditions of Use shown against individual types.

<b>Catalogue No.</b>	<b>Nominal Voltage / Current</b>	<b>Description</b>	<b>Conditions of Use</b>
<b>External Circuit Protection</b>			
216630	DC- 12 / 24V	DC line/tail input circuit ripple filter and over-voltage clamp	# Designers shall allow for internal MOV leakage current (0.5mA) and circuit loop resistance (400Ω).
216640	DC- 50V	DC line/tail input circuit ripple filter and over-voltage clamp	# Designers shall allow for internal MOV leakage current (0.5mA) and circuit loop resistance (3kΩ).
216655	DC- 50V	DC line/tail output circuit surge diverter	# Maximum current = 1.0A.
216660	AC- 120V	AC line/tail output circuit surge diverter	# External circuit must have BX & NX conductors (NOT common return). Maximum current = 1.0A.
216680	AC- 120V	AC line/tail circuit surge diverter	@#
555720	DC- 110V	DC line/tail circuit over-voltage clamp	@# External circuit must have B & N conductors (NOT common return).
<b>AF Circuit protection</b>			
216670	DC- 50V 1000mA	VF data line Modem/Fax over-voltage arrestor	# Attenuation DC – 4k Hz ±0.5dB, 4k – 10k Hz -20dB.
<b>Track Circuit Protection</b>			
555715	Nominal 90V	Spark gap/MOV track arrestor	@ Use with 216610 termination module. For AC, DC or AF track circuits having max 48V rail to rail.



## AUSTRALIAN RAIL TRACK CORPORATION LTD

Catalogue No.	Nominal Voltage / Current	Description	Conditions of Use
Power Supply Protection			
555128	DC- 24V	Balanced power supply over-voltage arrestor	@ Use with 216600 or 216610 termination module.
555670	AC- 275V	Line to Line or Line to Earth surge arrestor/diverter	♣ Use with 216605 termination module in 'shunt' connected form. NOT to be used on mains input feed.
555680	AC- 150V		
555690	AC- 480V		
Disconnection Link			
216620	AC- 30A DC- 20A	Dual Through Link cassette	@ Use with 216600 or 216610 termination module. Breaks both legs of circuit.
Accessory Hardware			
216600	AC- 800V, 30A DC- 500V, 20A	Termination Module	¶ Grey - Earthed to DIN rail. Mount only on DIN rail NOT also supporting 216605 or 216610 modules.
216605	Shunt connect format Max. current 200A		¶ Black - No Earth connection. Mount only on DIN rail NOT also supporting 216600 modules.
216610			¶ Blue - Isolated Earth connection. Mount only on DIN rail NOT also supporting 216600 modules.
216710	N/A	Identification Flag (Red)	Used to identify that removed cassette should not be re-inserted (circuit isolated / no protection).
218790	N/A	Earthing Comb (10 modules @ 24mm centres)	May provide earth connection to 216600 and 216610 modules (non-preferred path for 216600).

¶ Mounts to DIN 32mm (G) or 35mm (top hat) rail.

♣ May protect feeders originating from bus bars fitted with an ELD.

@ Cassette is NOT fitted with mechanical failure condition flag.

# Use with 216600 termination module.