



AUSTRALIAN RAIL TRACK CORPORATION LTD

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Discipline
Engineering Standard - NSW

Category
Signalling

Title
**Specification - Lightning/Surge Protection Inductor
/ Varistor Panel**

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SPS 34 - (RIC Standard: SC 09 15 01 00 SP)

Document Control

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The technical content of this document has been approved by the relevant ARTC engineering authority and has also been endorsed by the ARTC Safety Committee.

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About This Standard

This Specification describes the general requirements for Inductor/Varistor Panels to be manufactured and supplied to Australian Rail Track Corporation of NSW.

Document History

Primary Source – RIC Standard SC 09 15 01 00 SP Version 2.0

List of Amendments –

ISSUE	DATE	CLAUSE	DESCRIPTION
1.1	01/09/2004		Reformatting to ARTC Standard
1.2	14/03/2005	Disclaimer	Minor editorial change
1.3	06/05/2005	All	Document reformatted

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1. Introduction

This Specification describes the general requirements for Inductor/Varistor Panels to be manufactured and supplied to Australian Rail Track Corporation of NSW.

2. Referenced Documents

2.1 ARTC Specifications

This Specification refers to the following ARTC Specifications and Standards:

Specification SPS 37 - Power Inductor

Specification SCP 04- Surge Protection Requirements

2.2 Australian Standards

AS 3000/1991 - Electrical Installations-Building, Structures & Premises

3. General

Inductor/Varistor Panel shall be required to provide lightning surge suppression on AC and DC power supply mains.

The panel shall be referred to as the IVP-15, IVP-50 or IVP-100 as appropriate.

Panels with higher current ratings shall comply with this Specification as far as practicable considering the following factors:

- 1) Voltage drop across the IVP shall not exceed 2.0V at full load
- 2) Temperature rise at full rated current shall not be above 40 C at ambient temperature of 70 C.

4. Operation Conditions

The equipment shall be capable of operating satisfactorily under the following conditions:

- a) Ambient temperature range -10 C to 70 C
- b) Relative humidity 0 to 95%.

5. Design Requirements

5.1 Ratings

15, 50, 100 amperes AC or DC for IVP-15, IVP-50 and IVP-100 respectively

5.2 Construction

- a) Construction shall be in accordance with the drawing No M08-402. Critical values are the overall size, mounting centres, and the relative position of the input, output and earth terminations.
- b) All components shall be securely mounted on a 10mm panel. The panel shall be made of either paper-based Phenolic or ABS.

- c) All components shall be readily and individually replaceable in case of failure.
- d) All material fittings, bolts, nuts, etc, shall be Nickel plated Brass.

5.3 Components

- a) The inductors shall be as specified in Specification 868 for IVP-50 and IVP-100
- b) The varistors shall be "GE" type V150HE150, "Siemens" type SIOVB32K150 or an approved type equivalent in voltage and power ratings.

5.4 Wiring

- a) All conductors shall be multi-stranded, with sizes and current ratings in accordance with AS 3000-1991.
- b) Minimum insulation shall be 0.6KV, V75 grade PVC
- c) All conductors shall be as short and as direct as possible with smooth curves of maximum practical radius.
- d) All conductors shall be terminated with suitable crimp lugs either pre-insulated doublegrip type for smaller conductors, or in the case of larger conductors, non-insulated lugs with a heat-shrink sleeve applied after crimping. The heat shrink sleeve shall cover the body of the crimp lug and extend at least 15mm over the conductor insulation.

5.5 Terminals

The Earth Terminal shall be a 40mm long M6 Nickel plated Brass stud provided with 3 washers, two nuts and one lock nut.

Terminals labelled as "Line" and "Equipment" form part of the inductor and shall be as described in Specification SPS 37.

5.6 Labelling

- a) All labelling shall be permanently affixed, clearly legible, and of a material which will not fade due to weathering over time or repeated handling.
- b) Input and Output terminals shall be labelled "Line 1", "Line 2", "Equipment 1" and "Equipment 2" respectively. The Earth terminal shall be labelled "Signalling Earth".
- c) In addition the unit must be fitted with a readily visible label stating "IVP-15", "IVP-50" or "IVP-100" as appropriate, the manufacturer's identification and date of manufacture.