



AUSTRALIAN RAIL TRACK CORPORATION LTD

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Discipline
Engineering Standard - NSW

Category
Signalling

Title
Lightning/Surge Protection - Varistor/Arrestor Panel (VAP)

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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 Varistor/Arrestor Panels to be manufactured and supplied to Australian Rail Track Corporation or contractors to Australian Rail Track Corporation.

Document History

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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 Varistor/Arrestor Panels to be manufactured and supplied to Australian Rail Track Corporation or contractors to Australian Rail Track Corporation.

2. Applicable Documents

2.1 Australian Standards

AS 3000/1986 : Electrical Installations-Building, Structures & Premises.

2.2 SRA Specifications

Specification No. SCP 04 - Lightning/Surge Protection Requirements.

3. General

Varistor/Arrestor Panel which shall be termed as the "VAP" shall provide Lightning/Surge suppression on AC and DC power supply feeders.

4. Operation Conditions

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

- (i) Ambient temperature range -10 C to 70 C
- (ii) Relative humidity 0 to 95%

5. Design Requirements

5.1 Construction

Construction shall be in accordance with the drawing No. D9925. Critical values are the overall size, mounting centres, and the relative position of the input, output and earth terminations.

All components shall be securely mounted on a 6millimetre panel. The panel shall be made of either paper-based Phenolic or ABS.

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

5.2 Components

Surface mounting ctal socket shall be used to take Arrestor "Sankosha" type 3Y20 - 290 GT. The terminals 1-2, 3-4 and 5-6-7-8 shall be bridged if these terminals are not already bridged internally within the socket.

The Varistor shall be "GE" type V150HE150,"Siemens" type SIOVB32K150 or an approved type equivalent in voltage and power ratings.

5.3 Wiring

All conductors shall be multi-stranded, with sizes and current ratings in accordance with AS3000-1986, Table B4.

Minimum insulation shall be 0.6KV, V75 grade PVC.

All conductors shall be as short and as direct as possible with smooth curves of maximum practical radius.

All conductors shall be terminated with suitable crimp lugs either pre-insulated double grip type for smaller conductors, or in the case of larger conductors, non-insulated lugs with a heatshrink 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.

5.4 Terminals

The Earth terminal shall be M6 and 40millimetre long Nickel plated Brass stud provided with 3 washers, 2 nuts and one lock nut for each stud. The other terminals shall be as shown in the drawing.

5.5 Labelling

All labelling shall be permanently affixed, clearly legible, and of a material which will not fade due to weathering over time or repeated handling.

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".

In addition the unit must be fitted with a readily visible label stating "VAP", the manufacturer's identification and date of manufacture.