



BR 991

Specification

For

British Railways

Flashing Signal Aspect Control Unit

British Railways Board



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Flashing Signal Aspect Control Unit

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AMENDMENTS

Amd. No.	Date	Text Affected

British Railways Board

BRITISH RAILWAYS BOARD

SPECIFICATION No. 991

FLASHING SIGNAL ASPECT CONTROL UNIT

FOREWORD

This Specification is issued by the Stores Controller (Railways), Board Headquarters, the Railway Technical Centre, Churnet House, Carrington Street, Derby DE1 2RY; from whom further copies may be obtained.

Technical queries shall be referred to:- Director of Signal and Telecommunications Engineer, Melbury House, Melbury Terrace, London NW1 6JU
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1. REFERENCES

Reference in this Specification is made to:

British Railways Specification: 903 - Electrical Requirements for Standard Colour Light Signals

967 - Railway Signalling Apparatus - Environmental Conditions

British Railways Drawing; BRS-SM 295 - Modular Dimensions for Small Rack-mounted Equipment

British Standards: 469 - Electric Lamps for Railway Signalling

714 - Cartridge Fuselinks for use in Railway Signalling

2. GENERAL DESCRIPTION

2.1 This Specification relates to a unit designed to supply a pulsating current to signal lamps, such that the signal aspect appears to flash. The supply to the signal lamp is pulsated rather than interrupted so as to improve the operating conditions of the lamp.

2.2 The signal lamp is to be controlled on the primary 110 V a.c. side of the supply to the signal head (see fig. 1), and the controlling circuit is to be electrically isolated from the rest of the unit.

2.3 When the unit is not supplying the signal lamp, the operation of the pulse generator is to be detected. When the unit is supplying the signal lamp, the unit is to detect the pulsation of the lamp voltage. The detection is to drive a proving relay.

- 2.4 The unit is to select the detection of the pulse generator, or of the lamp voltage in response to an external relay contact.
- 2.5 The unit is to supply either one, or two lamps connected in parallel, depending on an external connection.
- 2.6 The unit is to be designed so that the proving relay is only energised when a recognisable flashing aspect is being produced by the unit. A recognisable flashing aspect is regarded as a single, or double lamp load, with at least one lamp filament intact; which completes a flashing cycle within the 3 sec. during which an approaching train is within signal sighting distance; and during which the lamp is bright for at least 30% of the period.
- 2.7 The unit is to be constructed solely from solid-state components, with a demonstrable reliability giving an MTBF of greater than 10 years.
- 2.8 The unit is to consist of: a pulse generator; a lamp driver; a lamp detector; and a detector amplifier. The lamp driver and lamp detector are to be insulated from the rest of the unit by insulation able to withstand 2000 V a.c. for one minute.

3. INPUT AND ELECTRICAL ENVIRONMENT

- 3.1 The unit will be supplied with a nominal 110 V a.c. 50 Hz supply. The input voltage may vary between 95 and 120 V a.c., and the frequency vary by ± 2 Hz.
- 3.2 The inrush current to the unit shall not blow a 3 A fuse to BS 714 when fed from a 110 V a.c. signalling supply of negligible impedance.
- 3.3 The unit shall withstand the following surges which may appear on the 110 V mains supply:

Voltage	Duration (seconds)	Source Impedance (ohms)	Energy
3.5 kV	1×10^{-7}	500	3 mJ
1.5 kV	1×10^{-5}	200	0.1 J
600 V	1×10^{-3}	15	6 J
300 V	1×10^{-3}	2	20 J

4. OUTPUT

- 4.1 The unit shall control either one signal lamp, or two signal lamps connected in parallel. The signal lamps will be type SL35 to BS 469, and will be supplied through the arrangement specified in BR Specification 903, for flashing aspects.
- 4.2 When the unit is operating correctly, a d.c. proving relay which has a nominal resistance of 1000 ohms, shall be provided with a nominal 50 V d.c. with a ripple not exceeding 40%. The operating characteristics of the relay will be; maximum pick up voltage - 40 V d.c.; minimum release ratio - 50%; maximum power dissipation - 3 watts.