

BRITISH RAILWAYS BOARDSPECIFICATION NO. 1908AFORSOLID STATE INTERLOCKING PANEL PROCESSOR MODULE (MKII)FOREWORD

This specification supersedes all previous issues and is issued by:-

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from whom further copies may be obtained.

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The information contained within this document is confidential and must not be used other than for the purpose for which this specification was released.

REFERENCES

Reference is made in this specification to:-

British Railways Specifications

- 967 Environmental conditions for Railway Signalling apparatus.
- 1900 General Specification for Solid State Interlocking equipment
- 1904A Data Link Module (Mk III)
- 1905A Multiprocessor Module (Mk II)
- 1906 Long Distance Terminal
- 1911A Solid State Interlocking Processor Memory Module
- 1990 Procedures for Programming and Checking PROM Devices for Vital Systems.

The latest issue of all specifications, drawings and British Standards shall apply unless otherwise stated.

LSDS7022/1

1. GENERAL

- 1.1 This specification states the specific engineering requirement for a solid state interlocking Panel Processor Module ("PPM").
- 1.2 PPMs are the interface between the triplicated Multiprocessor Modules (the interlocking) and the Panel Multiplexer. They are connected also to the technician's terminal and external systems such as train describer or automatic route setting.
- 1.3 A Solid State Interlocking is provided with two PPMs in order to increase system availability. They are connected together so as to ensure synchronous operation and to detect the presence (or absence) of the other panel processor module. The system must continue uninterrupted when one module fails.
- 1.4 The module shall meet all the requirements of BR Specification 1900 unless otherwise stated.
- 1.5 A "SYSTEM" indication shall be provided on the front of the module and "POWER" and "SYSTEM" indications on the rear of the module.
- 1.6 The module shall be fitted with a Manufacturer's label at the rear of the module, containing at least the following information:-

Manufacturer's name
Manufacturer's part number
Module serial number
Date of manufacture
Module type (typically "Panel Processor Module Mk II")
BR Specification number BR1908A
BR Modification state.

2. CONSTRUCTION

- 2.1 The module shall be constructed to meet the requirements of BR Specification 1900.
- 2.2 The module shall meet the requirements of BR 967 Category B with the exception that drip proofing is not required (the cabinet in which the module is located shall be drip proof to BR 967 Category C).
- 2.3 The module shall be host to a Processor Memory Module ("MM") which is specified in BR Specification 1911A.
- 2.4 The module shall be internally labelled in accordance with the following:-
 - 2.4.1 The p.c.b. assembly shall identify all component positions.
 - 2.4.2 The p.c.b. shall carry the manufacturer's identity, p.c.b. type, date and modification state.

3. ELECTRICAL REQUIREMENTS

- 3.1 The module shall contain all of the circuitry shown on the following WBS drawings:-

WS/E19050/151 Processor circuit diagram.
WS/E19068/1 Power Supply & Interface Circuit Diagram.

or GEC drawings:-

OW 60571 PPM main circuit
2W 60583 PPM Power Supply circuit
3W 60582 Suppression PCB

3.2 A single PCB shall be used. All proposals for input/output connection to and from the PCB assembly shall be subject to the specific approval of the Director of S&T Engineering.

3.3 All components on the pcb shall be soldered except that integrated circuit sockets shall be provided for the following components. Such sockets shall be subject to the approval of the Engineer.

- (a) CPU
- (b) PROM and EPROM
- (c) VIA

3.4 PROM devices will be considered correctly programmed and labelled only if the requirements of BR Specification 1990 have been met.

4. CONNECTORS

4.1 All external connections to the module shall be made via a multiway connector. The standard connector shall be a 75 way rectangular form. Further details of this connector and the pin allocation are shown in Appendix 1 to this specification.

4.2 A connector for a memory module shall be 40 way IDC male header. A suitable ribbon cable shall be provided to plug into the header. Each end shall be terminated in a 40 way IDC female connector to satisfy BR Specification 1911A. See also Appendix 2. The connector shall have central polarising keying to ensure that there will be only one way to plug in the Memory Module.

5. RELIABILITY

The module shall be designed to have a nominal predicted MTBF of 17,200 hours. The Contractor shall provide full details of the method of calculation and database used.

6. TYPE APPROVAL TESTS

Type approval testing will be carried out as detailed in BR Specification 1900. The following tests will be applied to an example of a PPM. A MM should not be installed except for electrical tests.

Visual Inspection 1
Performance Test 1
Dry Heat Test
Damp Heat Test
Low Temperature Test
Drop Test
Vibration Test

Insulation Test
Condensation Test
EMC Test
Visual Inspection 2
Performance Test 2

7. ACCEPTANCE

Details of the acceptance tests to be carried out on every module after manufacture are shown in Appendix two of this specification. In order to be accepted each module must pass the Acceptance Test and be supplied with all documentation specified herein or in BR Specification 1900.

Contractor's test reports shall indicate which acceptance test number is referred to in their reports.

APPENDICES

1. Panel Processor Module Connections
2. Memory Module Connections.
3. Acceptance Test Specification.

11