



BR 1901A
April 1986
Provisional

Solid State Interlocking Lineside Points Module

British Railways Board



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AMENDMENTS

Amd. No.	Date	Text Affected

British Railways Board

BRITISH RAILWAYS BOARD
SPECIFICATION NO. 1901A

Provisional
April 1986

FOR
SOLID STATE INTERLOCKING LINESIDE POINTS MODULE

FOREWORD

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

British Railways Board,
Director of S. & T. Engineering,
Materials Management Group,
Room 1103,
Rail House,
CREWE,
Cheshire. CW2 6EA

from whom further copies may be obtained.

Technical queries shall be referred to the above address.
For telephone enquiries the numbers are:-

BT (STD) 0270-532494
BT (STD) 0270-532345 FAX
BR (ETD) 05-32494
BR (ETD) 05-32345 FAX

REFERENCES

Reference in this Specification is made to:-

British Railways Drawings

None as yet.

British Railways Specifications

- | | |
|------|---|
| 1900 | General Specification for Solid State Interlocking equipment. |
| 967 | Environmental conditions for Railway Signalling apparatus. |
| 1990 | Procedures for programming and checking PROM devices for vital systems. |

The latest issue of all Specifications and British Standards shall apply unless otherwise stated.

Other Specifications

BS 381c British Standard Paint Colours

2007/0323r/1

1. GENERAL

- 1.1 Points modules form the power interface between the serial data distribution system of a solid state interlocking and the lineside points which it controls. The modules also enable the input of detection position, track circuit state and other signalling information to be made available to the central interlocking. The detailed structure, operation and connection configuration are obtained in the handbook for the S.S.I. Points Module, B.R.
- 1.2 This Specification states the engineering requirements for a solid state interlocking module for the control of lineside points.
- 1.3 The module shall meet all the requirements of B.R. Specification 1900 unless otherwise stated.

2. CONSTRUCTION

- 2.1 The module shall be constructed to meet the requirements of B.R. Specification 1900 Section 4.
- 2.2 The module shall meet the requirements of B.R. Specification 967 Category D.
- 2.3 The module shall be internally labelled in accordance with the following:-
 - (a) The P.C.B. assembly shall have all the component numbers and positions marked.
 - (b) The PCB assembly shall carry the Manufacturers name, Module type, Serial No., date of Manufacture and Modification state.
- 2.4 A nameplate with natural lettering on a black ground to B.R. Spec. 1900 Appendix 1 shall be attached to the outside of the module. The label shall be generally in accordance with the drawing 1901-A4-1 and mounted on the module front panel (plug side).
- 2.5 The materials used and finish shall comply with BR Specification 1900 Clause 5. The modules shall be light aircraft Grey to BS Specification 381c colour number 627.

3. ELECTRICAL REQUIREMENTS

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

GEC Drawings No.	OW 60419	Schematic
	OW 60417	Power Switching
	OW 60416	Multiplex & Interface
	IW 60170	Power Supply
	OW 60418	Processors

Cont'd.

- 3.2 The use of unsoldered plug-in components shall be avoided except for the security fuse, CPU, PROM and Non Volatile RAM which shall be mounted using sockets approved by the Director of S. & T. Engineering.
- 3.3 The circuitry shall be so arranged that there is only one electrical commonpoint between the power supplies for the logic circuits.
- 3.4 Special care shall be taken in the design of the printed circuit for the fused supply to ensure that this supply cannot be shorted to another supply track, resulting in the processors supply being maintained after a security shutdown. Care must also be taken in the design of the input connections to prevent a short circuit between two tracks producing a false input.
- 3.5 The two EPROM's shall have been programmed to the requirements of B.R. Specification 1990 "Procedures for programming and checking PROM devices for vital systems".
- 3.6 External indications shall be provided as shown on Drawing Nos. 1901-A4-1.
- 3.7 The security fuse shall be in such a position that it is accessible for changing without dismantling the complete assembly. The NV RAM, and EPROM should also be accessible in a similar manner if at all possible.

4. CONNECTORS

The module shall be connected to the signalling devices and to the data link module via a multiway connector. The standard connector shall be a 75 Way rectangular form. Further details of this connector and the pin allocation to be used are shown in Appendix one of this Specification.

5. RELIABILITY

The module shall be designed to achieve a predicted nominal M.T.B.F. of 10 years. The contractor shall send details of the method of calculation used.

6. MODULE AND OUTPUT RATINGS

The maximum current rating of the module measured at the 110V input shall be 300mA.

Each of the 4 valve drive outputs shall be rated at 1 amp.

Each of the 4 motor drive outputs shall be continuously rated at 9 amps. The maximum starting surge current is 25 amps.

Cont'd.

7. TYPE APPROVAL TESTS

The type approval testing shall be carried out as detailed in B.R. Specification 1900 Section 8. The following type tests shall be applied to an example of the points module:-

- Visual inspection (1)
- Performance test (1)
- Dry heat test
- Damp heat test
- Low temperature test
- Drip test
- Drop test
- Vibration test
- Humidity test
- Insulation test
- EMC tests
- Condensation test
- Visual inspection (2)
- Performance test (2)

8. SOAK TEST

Every module shall be subject to a 48 hour soak before the acceptance tests are carried out.

9. ACCEPTANCE TESTS

Details of the acceptance tests to be carried out on every module after manufacture are shown in Appendix two of this Specification.

The Contractor shall submit a copy of their proposed test specification to the Engineer for his approval before acceptance tests are required to be carried out.

The Contractors own test specification shall be paragraphed according to those laid out in Appendix 2 or a cross reference provided to facilitate the checking of results.

POINTS MODULE
 TYPE SS 301
 BR SPECIFICATION 1901A
 SERIAL N°
 DATE

MODIFICATION STATE											
1	2	3	4	5	6	7	8	9	10	11	12

☐ POWER

☐ SYSTEM

☐ RX DATA

☐ POINTS X

☐ POINTS Y

MADE IN U.K.

16 mm

92 mm

Space for
Manufacturers Logo
etc.

Manufacturers
Type No

200 mm

LABEL FOR POINTS MODULE



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DWG No

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