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Ref	NR/PS/VEH/00016
Issue	I
Date	October 2002

Lineside Hot Axle Bearing Detectors (formerly RT/E/PS/00016)

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Railtrack Company Product Specification

Lineside Hot Axle Bearing Detectors

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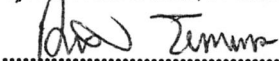
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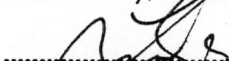
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ISSUE RECORD

This Product Specification will be updated when necessary by the distribution of a complete document. Amendments will be marked by a vertical black line in the adjacent right hand margin.

Issue	Issue Date	Implementation Date	Comments
I	October 2002	November 2002	New Issue

IMPLEMENTATION

The requirements of this Product Specification shall be implemented as from 06th October 2002.

COMPLIANCE

Compliance with this Product Specification is mandatory unless express written permission is obtained for any deviation from the Chief Engineer.

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Published & Issued by **Railtrack plc (in Railway Administration)**
Railtrack House
Euston Square
LONDON
NW1 2EE

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I. INTRODUCTION

I.1 Purpose

- I.1.1 This Product Specification states the technical requirements for Hot Axle Bearing Detector (HABD) systems to be installed on Railtrack's operational infrastructure. Their purpose is to observe the rolling stock and identify and provide warning of an overheating axle bearing.
- I.1.2 This document is to be read in conjunction with the relevant procurement documentation that will be site and/or line specific.

I.2 Scope

- I.2.1 This Product Specification states the requirements for the design, manufacture, testing at both manufacturer premises and at site, delivery and commissioning of the HABD(s), together with the preparation and supply of associated documentation, drawings and manuals.

I.3 Definitions

British Standard	A standard published by the British Standards Institution. Its identity is prefixed by BS.
Equipment	All constituted parts and accessories of the HABD.
European Standard	A standard published by the European Committee for Standardisation, or by the European Committee for Electrotechnical Standardisation. Its identity is prefixed by EN.
International Standard	A standard published by the International Electrotechnical Commission. Its identity is prefixed by IEC.
Procurement documentation	The contract specific document(s) to be used with the relevant Railtrack Company Standard(s) for contract works. It will contain specific site(s) detail and/or Line specific details.
Railway Group Standard	A high-level standard published by Railway Safety. Its identity is prefixed by G, followed by a letter designating the subject category.

Railtrack Company Standard	A standard, forming a Specification, Procedure or a Code of Practice, published by a Directorate of Railtrack PLC. Its identity is prefixed by RT/, followed by a letter designating the subject category.
Rolling Stock	All rail vehicles that run on Railtrack infrastructure.
Scanner	That part of the HABD that is located on or near the rail and that observes and collects heat measurements from the passing rolling stock.
Signal Control Centre	The signalling centre, such as an IECC, that is responsible for rolling stock movements on the Line where the HABD(s) is (are) to be located.
System Central Processor	The central processor of the supplied HABD system that controls the peripheral parts of the HABD system at the SCC.
Signaller	The person responsible for train movement control.
Data Information Management System	The Railtrack system for collecting, storing and distributing key data from Remote Condition Monitoring systems in a common format.

I.4 Abbreviations

AVI	Automatic Vehicle Identification.
CE	Committée European
CD-ROM	Compact Disc-Read Only Memory
DPU	Data Processing Unit system
FTP	File Transfer Protocol
HABD	Hot Axle Bearing Detector system
LAN	Local Area Network
MTBF	Mean Time Between Failure
MTTR	Mean Time To Repair
PC	Personal Computer
PDF	Picture Data Format
RCM	Remote Condition Monitoring
SCC	Signalling Control Centre
SCP	System Central Processor
SSI	Solid State Interlocking
TCP/IP	Transport Control Protocol/Internet Protocol
UPS	Uninterruptible Power Supply
WAN	Wide Area Network
XML	eXtensible Markup Language

I.5 References

Appendix A gives a non-exhaustive listing of applicable Standards, and other useful documentation relevant to this Product Specification.

2. GENERAL

2.1 Safety, Legislation, Regulations and Recommendations

2.1.1 At all times, the HABD shall be safe. All appropriate measures shall be taken to ensure the safety of persons concerned in its construction, operation, maintenance, repair and eventual disposal. All equipment necessary for the safe and satisfactory operation, control and protection of the HABD shall be chosen appropriately.

2.1.2 The constituent parts of the HABD shall be adequately provided with facilities for both external and internal padlocking, earthing, insulating, screening and enclosing as appropriate. Safe and appropriate access shall be provided for both operation and maintenance purposes.

2.1.3 The HABD shall comply with the requirements of all relevant Statutory Instruments, Regulations and Orders, and take cognisance of relevant documents, including, but not limited to:

- a) The Health and Safety at Work etc. Act 1974;
- b) The Electricity at Work Regulations 1989;
- c) The Railways (Safety Case) Regulations 2000;
- d) Electromagnetic Compatibility (EMC) Regulations;
- e) The Control of Substances Hazardous to Health Regulations (COSHH) 1999;
- f) The Construction (Design and Management) Regulations, 1994;

This information is not necessarily exhaustive and does not modify the legal obligations of the manufacturer.

2.1.4 The manufacturer shall provide competence assessment criteria for workplace assessments for all aspects associated with the safe operation and maintenance of the HABD.

2.1.5 For all materials used both in the construction of the HABD and for subsequent maintenance purposes, and which are considered as falling within the scope of the COSHH Regulations 1999, the manufacturer shall provide a risk assessment report for these materials for the life of the equipment and its eventual disposal. Materials containing asbestos, chlorinated fluorocarbons (CFCs) and polychlorinated biphenyls (PCBs) shall not be used.

- 2.1.6 Where possible recycled materials and/or products, that are environmentally friendly during their life and on disposal, shall be first and foremost chosen for production.

2.2 Design, Manufacture and Workmanship

- 2.2.1 The HABD shall be designed and manufactured in accordance with best available techniques not entailing excessive cost, and taking cognisance of the environment in which it will operate.
- 2.2.2 All equipment shall be new, of current manufacture, and shall not have been in prior service except as required during testing, and be of the quality and type most suitable for working under the conditions specified for the service life of the HABD.
- 2.2.3 Where required, the manufacturer shall provide a product safety case statement for equipment with novel or innovative features not previously used within the railway environment. The safety case statement shall quantify any risks and indicate how these risks are controlled.

2.3 Spare Parts and Consumable Items

- 2.3.1 The manufacturer shall make recommendations for holdings of spare parts and consumable items, based on estimated replacement rates and delivery periods, to ensure that the HABD complies with the requirements of this Product Specification throughout its service life.
- 2.3.2 The manufacturer shall indicate, where possible, the extent of commonality with equipment previously supplied by them to Railtrack..

2.4 Documentation

- 2.4.1 The manufacturer shall prepare and supply comprehensive and specific HABD documentation, drawings and manuals, in a hard paper copy and legible format, covering all aspects of safe handling, installation, commissioning, operation, maintenance, storage and eventual disposal. As a minimum, three copies of all associated documentation shall be provided in English.
- 2.4.2 The manufacturer shall in addition prepare and supply all HABD documentation, as mentioned in the above paragraph, on industry standard computer disk (CD-ROM) in PDF file format.

2.5 Delivery

- 2.5.1 The HABD shall be suitably prepared to withstand, without any damage or deterioration, handling, transit, storage and positioning. If required, the HABD shall be suitably protected against external climatic conditions for an indefinite storage period.
- 2.5.2 Any factor that may affect the onward delivery of the HABD to a final site (e.g. dimensions and weight limits) shall be subject to agreement between the manufacturer and Railtrack.

3. COMPLIANCE WITH STANDARDS

3.1 International, European and British Standards, and Reference Documents

- 3.1.1 All work associated with the HABD shall comply with all relevant parts of European Standards, whether reference is made to them or otherwise, within the text of this Product Specification.
- 3.1.2 In the absence of relevant European Standards, International or National Standards having currency within the European Community shall apply subject to the prior agreement of Railtrack.

3.2 Specific Equipment Standards

- 3.2.1 The HABD shall be designed, manufactured and tested in accordance with this Product Specification. Evidence shall be provided that such tests have been satisfactorily completed.

3.3 Product Acceptance

- 3.3.1 Product Acceptance by Railtrack will be required for all new systems and components in accordance with Railtrack Company procedure RT/LS/P/029.

4. PERFORMANCE REQUIREMENTS

4.1 General

- 4.1.1 The HABD shall be fit for its intended purpose when connected into the Railtrack Infrastructure, throughout its service life. It shall not affect the normal operation of Railtrack controlled infrastructure and in particular it shall not affect or be affected by the normal or abnormal operation of any signalling system.
- 4.1.2 The HABD shall reliably detect an overheating bearing to at least an accuracy of eight out of every ten trains, or axles, that it identifies as defective (e.g. 80% successful hit rate). The procurement documentation may specify a figure higher than this depending on the site(s) specific traffic profile.
- 4.1.3 The HABD shall provide the performance set out in this document, and where applicable that specified in accompanying procurement documentation, throughout its service life.

4.2 Electromagnetic Compatibility

- 4.2.1 The HABD shall comply with the requirements of the following for electromagnetic compatibility purposes:
- a) GM/RC1500;
 - b) GM/RT1031;
 - c) BS EN 50121.
- 4.2.2 Circuits within the HABD, including power supplies, connected to external devices, such as transducers and other equipment shall be free from intentional earth connection. Electrical insulation in excess of $4M\Omega$, measured at 250V dc, must exist between any such circuit and any infrastructure equipment to which it may be physically attached.
- 4.2.3 Circuits, including power supplies, connected to external devices physically attached to parts of the infrastructure electrically separated for functional purposes (eg the rails of a track circuited line) must be electrically isolated from each other (ie in excess of $4M\Omega$ measured at 250V dc).