

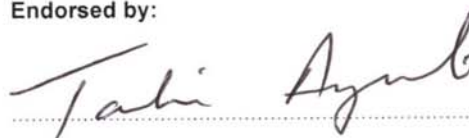
Ref:	NR/L3/SIG/30051
Issue:	Issue 1
Date:	06 March 2009
Compliance date:	05 June 2010

Level 3

Signalling Functional Power Loads Data Management

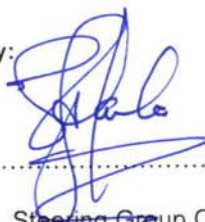
Endorsement and Authorisation

Endorsed by:



Tahir Ayub, Working Group Chair

Authorised by:



Steve Hailes, Steering Group Chair

Accepted for issue by:



Mick McManus, National Standards Manager

This document is the property of Network Rail. It shall not be reproduced in whole or part nor disclosed to a third party without the written permission of Network Rail.
© Copyright 2010 Network Rail.

Uncontrolled copy once printed from its electronic source.

Published and Issued by Network Rail, Kings Place, 90 York Way, London. N1 9AG.



Documents

Document Sharing Hub

Ref:	NR/L3/SIG/30051
Issue:	Issue 1
Date:	06 March 2009
Compliance date:	05 June 2010

Issue record

Issue	Date	Comments
1	March 2010	First Issue

Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 5th June 2010.

When this standard is implemented, it is permissible for all projects that have formally completed GRIP Stage 3 to continue to comply with the Issue of any relevant Network Rail Standards current when GRIP Stage 3 was reached and not to comply with requirements contained herein, unless the designated Standard Owner has stipulated otherwise in the accompanying Briefing Note.

Where load data is not available for required products, it is acceptable to substitute load data for a similar product, as determined appropriate by the Functional Engineer.

Reference documentation

NR/L2/SIG/30051/A	Electrical Characteristic Data Entry Form
NR/L2/SIG/30051/B	Database Change Form
NR/L2/SIG/30051/C	Signalling Product Diversity Table
NR/L2/SIG/30051/D	Signalling Functional Power Loads Database
NR/L2/ELP/30050	Functional Signalling Power Supply Principles
GI/RT7017	Signalling and Safety-Related Telecommunications Power Supplies and Circuits
NR/SP/ELP/27243	Specification for Signalling Power Supplies
NR/GN/ELP/27310	Management of Signalling Power Supplies
NR/GN/ELP/00015	Guidance Note for Signalling Power Supply Design
NR/L2/EBM/029	Product Introduction and Change

Disclaimer

In issuing this document for its stated purpose, Network Rail makes no warranties, express or implied, that compliance with all or any documents it issues is sufficient on its own to ensure safe systems of work or operation. Users are reminded of their own duties under health and safety legislation.

Supply

Copies of documents are available electronically, within Network Rail's organisation. Hard copies of this document may be available to Network Rail people on request to the relevant controlled publication distributor and to other organisations from IHS (Technical Indexes Ltd) tel: 01344 328039.

Ref:	NR/L3/SIG/30051
Issue:	Issue 1
Date:	06 March 2009
Compliance date:	05 June 2010

Contents

1 Purpose	4
2 Scope	4
3 Roles and Responsibilities	4
4 Definitions	4
5 Types of Equipment	6
6 New Products Undergoing Product Acceptance	7
7 Legacy Products Already Holding Product Acceptance Certification	10
8 Capture of Points Machine and Level Crossing Barrier Machine Load Profile Data	14
9 Diversity	16

Copyright Network Rail

Ref:	NR/L3/SIG/30051
Issue:	Issue 1
Date:	06 March 2009
Compliance date:	05 June 2010

1 Purpose

This document describes the processes that shall be used to capture and update electrical characteristic data related to signalling products for the signalling functional power loads database. This procedure supports Network Rail standard NR/L2/SIG/30050 and applies to all signalling electrical products that have product approval certification or have been submitted for approval.

2 Scope

This procedure shall apply when adding, amending, or removing signalling products and their associated electrical characteristics to the signalling functional power loads database.

3 Roles and Responsibilities

A **Product Tester** is a person authorised to perform testing of signalling electrical products in order to capture electrical characteristics data. The product tester is also knowledgeable in statistical analysis and competent in the production of load profiles.

The **Product Acceptance Team** is the organisation that manages the product acceptance process for new products and manages the product acceptance database. The Product Acceptance Team is the owner of the Electrical Characteristic Data Entry Form.

A **Change Requestor** is any person who requires a change to signalling products and/or electrical characteristic data in the power loads database.

A **Functional Engineer** is a Network Rail Functional Engineer who is deemed competent in electrical system design and the verification and validation of electrical characteristic data including load profiles.

A **Nominated Representative** is a person who is an approved signatory for changes to the power loads database, who shall be a qualified Functional Engineer. The Nominated Representative acts as a point of contact for the Product Acceptance Team when new products are undergoing product acceptance.

The **Configuration Engineer** is responsible for updating the power loads database with new and updated signalling products and associated electrical characteristic data. Configuration Engineer is the owner of the Database Change Form and the Signalling Product Diversity Table.

The **Signalling Equipment Catalogue** is a database of electrical equipment used by automated electrical power design tools.

4 Definitions

Nominal Voltage is voltage recommended by the manufacturer of the electrical equipment so that satisfactory operation of equipment will be obtained.

NOTE Nominal voltage shall include ac (rms) or dc (Steady or Smooth).

Voltage Range is the minimum-to-maximum input-voltage span that the electrical equipment can withstand so that satisfactory operation of equipment will be obtained. Usually stated as a percentage either side of the Nominal Voltage.

Ref:	NR/L3/SIG/30051
Issue:	Issue 1
Date:	06 March 2009
Compliance date:	05 June 2010

Phase Dependency specifies the dependency of electrical equipment or associated equipment to allow satisfactory operation if supplies are derived from different phases of a power supply.

NOTE This is intended for equipment which relies on two separate feeds being at a specific phase relative to each other for satisfactory operation.

Nominal Load (VA) is the power consumed by the electrical equipment under normal operation expressed in VA.

Load Profile is the variation in the electrical current drawn versus time.

Power Factor [IEV 131-11-46] is the ratio of the absolute value of the active power to the apparent power. This shall be expressed either as a number between 0 and 1 or a percentage.

Inrush Current refers to the maximum, instantaneous input current drawn by electrical equipment when first energised.

Inrush Profile refers to inrush current drawn versus time.

Leakage Current [IEC 60990] is the electrical current that flows under normal operation through the protective conductor of electrical equipment.

[Supply Interruption Tolerance] Maximum Supply Interruption Time specifies the maximum amount of time of supply interruption under which the electrical equipment continues normal operation.

[Supply Interruption Tolerance] Minimum Reset Time specifies the minimum time that the electrical equipment is required to be in the off state before it can be energised after a power supply interruption.

Ref:	NR/L3/SIG/30051
Issue:	Issue 1
Date:	06 March 2009
Compliance date:	05 June 2010

5 Types of Equipment

The following lists the types of equipment for which electrical characteristic data shall be recorded.

- a) Train Detection
- b) Lineside Signals and Indicators
- c) Points Machines (including point machine heating systems)
- d) Staff Protection Systems
- e) Interlocking Systems (including computer and relay based)
- f) Control Systems (IECC, RETB, ERTMS, etc)
- g) Train Describers
- h) Level Crossings (barriers, road traffic lights, control systems, CCTV)
- i) Power Supplies
- j) Mechanical Signalling and Interlocking
- k) Train Protection Systems (AWS, TPWS, ATP, etc)
- l) Transmission (FDM, TDM, etc)
- m) Event Logging and Condition Monitoring
- n) Operational Telecoms
- o) Radio Systems (GSM-R, NRN, etc)
- p) LV Distribution Systems (switchgear, fuses, cables, cabinet lights, etc)

In addition to the above electrical loads, the database shall enable the electrical characteristics of the following signalling-related devices to be recorded:

- i. Fuses
- ii. Circuit Breakers
- iii. Batteries
- iv. Cable
- v. Battery Chargers
- vi. Uninterruptible Power Supplies (UPS)
- vii. Transformers
- viii. Transformer Rectifiers (T/J)

The list above is not exhaustive and may be extended but will be aligned to the Signalling Equipment Catalogue.