

Provisional

BRITISH RAILWAYS BOARD

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ELECTRONIC TOKEN SYSTEM TRAINBORNE EQUIPMENT: CAB DISPLAY UNIT

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## FOREWORD

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

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In this specification the Director of S & T Engineering, British Railways Board shall be referred to as the Engineer. The British Railways Board shall be referred to as the Board.

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APPENDIX ONE: CAB DISPLAY UNIT INTERFACE TO RADIO SYSTEM

DIAGRAM ONE: GENERAL ARRANGEMENT AND SPACE ENVELOPE OF THE CDU

DIAGRAM TWO: CDU FACEPLATE LABELLING

FIGURE ONE: ELECTRONIC TOKEN SYSTEM TRAINBORE EQUIPMENT

## 1. INTRODUCTION

- 1.1 Electronic Token is a method of train control, whereby the exchange of coded data messages between a control centre and a train results in a visual display of location information within the cab. This information is displayed to the driver by the Cab Display Unit (CDU) which forms part of the trainborne equipment.
- 1.2 The CDU has the following features:-
  - 1.2.1 A visual display for the location information.
  - 1.2.2 Buttons for token transfer operations.
  - 1.2.3 A key switch attached to an Annets key for ground frame control.
  - 1.2.4 Interface to trainborne radio equipment.
- 1.3 Cab display units will be permanently fitted to existing locomotives with one equipment in each cab. The equipment will interface with the existing trainborne radio equipment and will be powered from the existing power supply.

## 2. SCOPE

- 2.1 This specification is for the engineering development, packaging and production of cab display units that meet the operational and environmental requirements of the Electronic Token system.

## 3. REFERENCES

- 3.1 British Railways Board:- Director of S. & T. Engineering.  
Specifications:  
No. 1609 - VHF Band III Radio for the National Radio Network Incorporating the Train Overlay system.
- 3.2 British Railways Board:- Director of M. & E. Engineering.  
Specifications:  
TDE/G/77/R/71 - Specification covering general requirements for electrical equipment in use on traction and rolling stock.  
TDE/75/P/7 - Procurement specification for multi-pole circular connectors used on electrical equipment.  
TDE/74/P/74 - Internal cabling for Electronic equipment.  
TDE/76/P/46 - Solder pots for printed circuit boards.  
TEE/E/81/P/32 - Crimp connector taper pins for printed circuit boards.

### 3.3 BRB/RIA Technical Standards Committee

Specification No. 13 - General Specification for Electronic Equipment.

3.4 The latest issue of all the above specifications shall apply.

## 4. CAB DISPLAY UNIT

### 4.1 Mechanical Arrangements

- 4.1.1 The CDU shall be built in a Klippon K series diecast box size K6, or an equivalent box approved by the Engineer.
- 4.1.2 The general layout of display, buttons and other features shall be in accordance with diagram one.
- 4.1.3 The fixing centres shall be as shown in diagram one, the box shall accept fixing bolts of size M8.
- 4.1.4 The display shall consist of two, 16-character rows constructed from eight HDSP-2002 Red, L.E.D. displays. The CDU shall be fitted with a dimmer switch which shall cause the L.E.D.s to have their drive current reduced.
- 4.1.5 There shall be two push-buttons (sprung-return, momentary action) on the front face of the CDU. These buttons shall have a head area of between 20 and 40mm with one normally made, and one normally broken contact each. The buttons shall be suitable for low signal level application and be chosen to fulfil clause 7.3 and 10 of this specification and shall be approved by the Engineer.
- 4.1.6 There shall be a key operated release switch. This switch shall have two changeover contacts suitable for switching 5 volt d.c. low current levels. The key shall be removable from the switch only when it is in the vertical position. The surface area of the switch shall not exceed 10cm<sup>2</sup>.
- 4.1.7 A permanent label plate carrying the unique module identity shall be fixed between the two push buttons. This label shall be removable but not without dismantling the cab display unit, switches etc.
  - 4.1.7.1 The identity shall be a four digit number. The numbers shall be not less than 10 mm high.
- 4.1.8 The unit faceplate shall be labelled in accordance with diagram two. The lettering sizes shown are the minimum required.

### 4.2 Electrical Requirements

- 4.2.1 The CDU shall contain all of the circuitry shown in the following drawing:-
  - 4.2.1.1 RD/1850/01 - Electronic Token Trainborne Display/ Data Unit.
  - 4.2.1.2 Interface circuitry to the radio equipment (see Section 6.2.)