

SSI Data Preparation

Interlocking & Panel Processor Data Syntax Specifications

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I. Purpose and Contents

The purpose of this document is to provide a formal specification for the data constructs which may be used within Interlocking and Panel Processor data. Such a specification is intended to fulfil three purposes:

- (a) It supplements the Software Requirements Specification. The Interlocking and Panel Processor software must be capable of correctly processing any data which conforms with the syntax specification.
- (b) It specifies the requirements for the Interlocking and Panel Processor data compilers. The compilers must be capable of compiling any data which conforms to the syntax specification, and must detect any data which does not conform and generate meaningful error messages.
- (c) It acts as a reference document for staff engaged in data preparation, to assist in the design of non-standard and complex data for which examples are not available in the data preparation guide and its supplements.

This document's role is to fulfil purpose (c), whereas British Rail Research (now AEA Technology Rail) document ELS-DOC-4416 is used to fulfil purposes (a) and (b). In order to maintain strict compliance between the two documents, the Tables in each issue of SSI8003-91 are based on a direct copy of those in the current issue (at present issue C) of ELS-DOC-4416 (the only changes are the details added for addresses 1260 to 127F in Table 14). The syntax shown matches that which is used by compilers in SSI Design Workstation programs GS/SI8310 & GS/SI8320 Issue/Revision 8A. The additional data types and syntax associated with the SSI Axle Counter Module have been added in preparation for their future introduction.

The information is presented in the form of a series of Tables, which are of three types:

Table 1 lists all the individual data types which may be used in Interlocking and Panel Processor geographic data and identifies the data areas in which they may be used. The Table distinguishes between the use of the data types within general purpose logical expressions, and within special data constructs. The meaning of each data type and the source text format are described in the main Interlocking and Panel Processor Data Preparation Guides. The object code formats are defined in ELS-DOC-2903 "Design of Data Types for the SSI Project".

Table 2 defines the permitted data syntax structure for the general purpose logical constructs used throughout the data, and Tables 3-13 specify the permitted data syntax structures for the individual Interlocking and Panel Processor data files. The method used is based on BS 6154:1981 which allows complex

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data structures to be defined in terms of their constituent elements (in this case the individual data types). The BS 6154 terminology is summarised in Section 2 below.

Tables 14 & 15 list the pointer areas provided at the start of the Interlocking and Panel Processor data. These contain pointers which allow the fixed software to identify the starting points for the various data areas, and in some cases provide a count of the number of sets of data within each area.

2. Syntax Specification Method

The syntax specifications contained in Tables 2-13 use the "Method of Defining Syntactic Metalanguage" defined in BS 6154:1981. This is a method of rigorously defining a complex data structure in terms of its constituent elements. The first statement of each Table specifies the construction of the complete structure from simpler components, and the subsequent statements progressively define the structure of these components until all the components have been defined in terms of simple elements (in this case the individual SSI data types listed in Table 1). Each statement comprises:

```
statement number
name of the complex component being defined
=
expression combining one or more simpler components
;
```

Names of components may include any characters (including spaces) except the punctuation characters `=,|*()[]{}"`. The SSI data types which cannot be decomposed further within the specification are enclosed in quotes `"..."`. Comments may be included in the specification by enclosing the comment text between `(* and *)`.

Lists of elements are separated by the sequence operator `" , "` or the alternative operator `" | "`, and repetition of elements or lists of elements is indicated by round brackets (one occurrence), square brackets [zero or one occurrence] and curly brackets {any number of occurrences from zero upwards}. A precise limit on a number of occurrences may be provided by preceding round or square brackets by a decimal number followed by `"*"`.

Some example of statements with comments describing them:

```
1. element 1 = element 2 , "element 3" | "element 4" ;
```

(* Statement 1 defines that element 1 is composed of one occurrence of element 2 followed by one occurrence of either element 3 or element 4. Element 3 and element 4 cannot be decomposed any further within the syntax specification. *)