



# SLOVENSKI STANDARD SIST ETS 300 708 E1:2003

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## Televizijski sistemi – Prenos podatkov v sistemu Teletext

Television systems; Data transmission within Teletext

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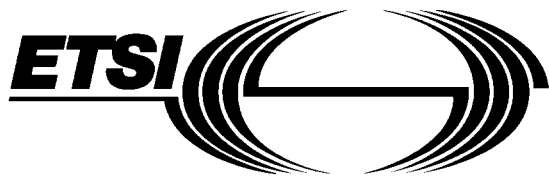
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## Television systems; Data transmission within Teletext

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## Contents

Foreword .....	5
1 Scope .....	7
2 Normative references .....	7
3 Definitions and abbreviations .....	7
3.1 Definitions .....	7
3.2 Abbreviations .....	8
4 Page Format - Clear .....	8
4.1 General points .....	8
4.2 Advantages .....	8
4.3 Disadvantages .....	8
4.4 Coding of the packets .....	8
4.4.1 Page header .....	9
4.4.2 Packets 1 to 23 (in future up to 25) .....	10
4.4.2.1 Transmission order .....	11
4.4.2.2 The Structure Header (SH) .....	11
4.4.2.3 Packing the data into the pages .....	11
4.4.3 Packet 28 .....	12
4.5 Providing a service according to Page Format - Clear .....	12
4.5.1 General points on Page Format - Clear .....	13
4.5.2 Encoding scheme for electronic data transmission .....	13
5 Page Format - CA .....	13
5.1 General points .....	13
5.2 Advantages .....	13
5.3 Disadvantages .....	14
5.4 Method of coding .....	14
5.4.1 Teletext page data .....	15
5.4.1.1 Scrambled Data Pages .....	15
5.4.1.2 Pages containing Reformatted Data .....	15
5.4.2 The Page Key Packet .....	16
5.4.2.1 Service Mode bits .....	16
5.4.2.2 Service Identification .....	17
5.4.2.3 Continuity and Repeat Indicators .....	17
5.4.2.4 Packet Flags .....	17
5.4.2.5 Data Length .....	17
5.4.2.6 Scrambling Method .....	18
5.4.2.7 The Cyclic Redundancy Check (CRC) word .....	18
5.4.3 Terminal Equipment Addressing Pages .....	19
5.4.3.1 System Key Packet .....	19
5.4.3.2 Shared User Packets .....	19
5.4.3.3 Unique User Packets .....	20
5.4.3.4 Service/Page Link packets .....	21
5.4.3.5 Link to Independent Data Line Services .....	21
5.5 Security of Page Format - CA .....	21
5.5.1 Cipher feedback algorithm .....	21
5.5.2 One-way function .....	22
5.5.3 Text scrambling .....	23
6 Independent Data Lines (IDL) .....	23
6.1 General points .....	23
6.2 Advantages .....	23
6.3 Disadvantages .....	23
6.4 Methods of coding .....	23

6.4.1	Designation code .....	23
6.4.1.1	Transmission multiplexing .....	23
6.4.2	Data Channel addressing .....	23
6.5	IDL Format A .....	24
6.5.1	Format Type (FT) .....	24
6.5.2	Interpretation and Address Length (IAL) .....	24
6.5.3	Service Packet Address (SPA) .....	25
6.5.4	Repeat Indicator (RI) .....	25
6.5.5	Continuity Indicator (CI) .....	25
6.5.6	Data Length (DL) byte .....	25
6.5.7	User Data Group .....	25
6.5.7.1	Dummy bytes .....	26
6.5.8	Cyclic Redundancy Check (CRC) word .....	26
6.5.8.1	Check word generation .....	26
6.5.9	Transmission sequence .....	27
6.6	Datavideo format .....	27
6.6.1	Packet address .....	27
6.6.2	Control Bytes (CB) .....	27
6.6.2.1	Packet Continuity Indicator (CI) .....	27
6.6.3	Masking indicator .....	27
6.6.4	Packet type indicator .....	28
6.6.5	User data group .....	28
6.6.6	Cyclic Redundancy Check (CRC) word .....	28
6.6.6.1	Check word generation .....	28
6.6.6.2	Check result .....	28
6.7	Low bit-rate audio .....	28
6.7.1	Method of coding .....	29
6.7.1.1	Decoder action .....	29
6.7.2	Programme-related audio service .....	29
6.7.2.1	Service Byte (SB) .....	29
6.7.2.2	Control Byte (CB) .....	29
6.7.2.3	Audio data .....	30
6.7.3	Programme independent audio service .....	30
6.7.3.1	Service Byte (SB) .....	30
6.7.3.2	Control Byte (CB) .....	30
6.7.3.3	Audio data .....	30
7	IDL - CA (type A) .....	30
7.1	General points .....	30
7.2	Advantages .....	31
7.3	Disadvantages .....	31
7.4	Methods of coding .....	31
7.4.1	Block Separator .....	31
7.4.2	Block Formats .....	31
7.4.3	Block Format A .....	31
7.4.3.1	Block Types .....	31
7.4.3.2	Primary Block Key Messages .....	32
7.4.3.3	Secondary Block Messages and Scrambled User Data .....	32
7.4.3.4	System-Key Message Block .....	32
7.4.3.5	Shared-User Message Block .....	32
7.4.3.6	Unique User Message Block .....	33
7.4.3.7	Service Address Message Block - Independent Data Service .....	33
7.4.3.8	Service Address Message Block - Link to Page Format - CA .....	33
	History .....	34

## Foreword

This European Telecommunication Standard (ETS) has been produced by the Joint Technical Committee (JTC) of the European Broadcasting Union (EBU), Comité Européen de Normalisation ELECtrotechnique (CENELEC) and the European Telecommunications Standards Institute (ETSI).

NOTE: The EBU/ETSI JTC was established in 1990 to co-ordinate the drafting of ETSs in the specific field of broadcasting and related fields. Since 1995 the JTC became a tripartite body by including in the Memorandum of Understanding also CENELEC, which is responsible for the standardization of radio and television receivers. The EBU is a professional association of broadcasting organizations whose work includes the co-ordination of its Members' activities in the technical, legal, programme-making and programme-exchange domains. The EBU has Active Members in about 60 countries in the European Broadcasting Area; its headquarters is in Geneva \*.

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## 1 Scope

This European Telecommunication Standard (ETS) describes the various ways in which Teletext may be used to carry non-Teletext services. It should be used in conjunction with ETS 300 706 [1]. An example is fully described in ETS 300 707 [2]. This ETS includes additional practical information on implementing a data service of this type.

Hooks into existing Teletext services may be provided from within the application which is carried as a non-Teletext service. A data broadcast application may be pointed to from the Magazine Inventory Page (MIP) or it may be allocated a specific page number. A Code of Practice (CoP) shall ensure that services destined for the consumer may be found quickly by "low-end" Teletext decoders but this is outside the scope of this ETS.

There are two methods available for carrying data services. The first method carries the data within Teletext pages. The data in these pages is not sui for direct display by a Teletext decoder and shall normally be allocated a special page number and/or have the display inhibited. The second method carries the data within Independent Data Lines (IDL) and these are independent of the page service.

With both Page and IDL formats there exist versions which offer Conditional Access (CA).

There are other specific IDL data services which have been defined but it is beyond the scope of this ETS to cover all of these.

## 2 Normative references

This ETS incorporates, by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references subsequent amendments to, or revisions of, any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] ETS 300 706: "Enhanced Teletext specification".
- [2] ETS 300 707: "Electronic Programme Guide (EPG); Protocol for a TV Guide using electronic data transmission".
- [3] ETS 300 231: "Television systems; Specification of the domestic video Programme Delivery Control system (PDC)".

## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of this ETS, the following definitions apply:

**data stream:** The sequence of bytes carried in a uniquely addressable data service.

**encryption:** The process whereby a sequence of data is made secret. See subclause 5.5 for further information.

**network operator:** The organization responsible for the compilation of the Teletext service for insertion into the available Vertical Blanking Interval (VBI) lines.

**scrambling:** The process whereby a sequence of data is made unintelligible. See subclause 5.5 for further information.

**service provider:** The organization responsible for the creation and supply of the data service application.

### 3.2 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

AUDELTEL	AUdio DEscription of TELevision
BL	Block Length
BP	Block Pointer
BS	Block Separator
BT	Block Type
CA	Conditional Access
CI	Continuity Index
CoP	Code of Practice
EPG	Electronic Programme Guide
FB	Filler Bytes
IDL	Independent Data Lines
LSB	Least Significant Bit
MIP	Magazine Inventory Page
MSB	Most Significant Bit
RI	Repeat Indicator
SH	Structure Header
VBI	Vertical Blanking Interval (fully defined in this ETS)

## 4 Page Format - Clear

### 4.1 General points

A page number which includes at least one hexadecimal digit should be chosen for this type of service. For an Electronic Programme Guide (EPG) service this will generally be page 1DF as fully described in ETS 300 707 [2]. The value nFF is not permitted for any data service, where n can take the value from 1 to 8 inclusive. The page number is defined in the Magazine Inventory Page (MIP), ETS 300 706 [1].

The user data is divided into blocks, each of whose length is defined. An additional check of where the block boundaries are located is provided by means of a block pointer placed in the first byte in each packet. The data stream is further identified by means of additional data provided in the page header. It is possible to carry several independent data services within the same page number.

### 4.2 Advantages

This mode is appropriate for reception by all existing Teletext decoders. A default coding method is defined in order that services may be offered using existing Teletext systems. Synchronization of the user data blocks is assured by means of a simple robust method of dual pointing to each block start location. Future possibilities exist by providing an additional packet 28 which will further define the coding system in use. It is left up to the service provider to apply any additional protection to those parts of his service which require it. It is possible to sub-divide the service into those parts which will be required by all decoders and those parts which will only be required by the more sophisticated decoders.

### 4.3 Disadvantages

This mode is not efficient for sending a small amount of data as there is always the overhead of including a page header and the optional, but useful, packet 28. Another disadvantage of this mode is that the data transmission efficiency is further reduced when the Teletext broadcaster wishes to send the data in a fragmented way in order to interleave the data service with his primary Teletext service.

### 4.4 Coding of the packets

In order to provide greater flexibility for the network operator it is not necessary to fill each data page. Several separated headers, each with some data packets, may be required to provide the data service and this technique is covered fully in ETS 300 706 [1]. In the case of a data service it is possible to send full but fragmented pages as well as to simply send shorter pages.

Fragmented pages are usually interleaved with one or more other pages. Each fragmented page contains, in row order, parts of a full page. Fragmented pages transmitted in stream 1 shall obey the 20 ms rule for each fragment.

#### 4.4.1 Page header

This is necessary but shall not generally contain any of the application data. It may be identical to all others in the same magazine. The use of the Teletext page sub-code is defined as shown in figure 1.

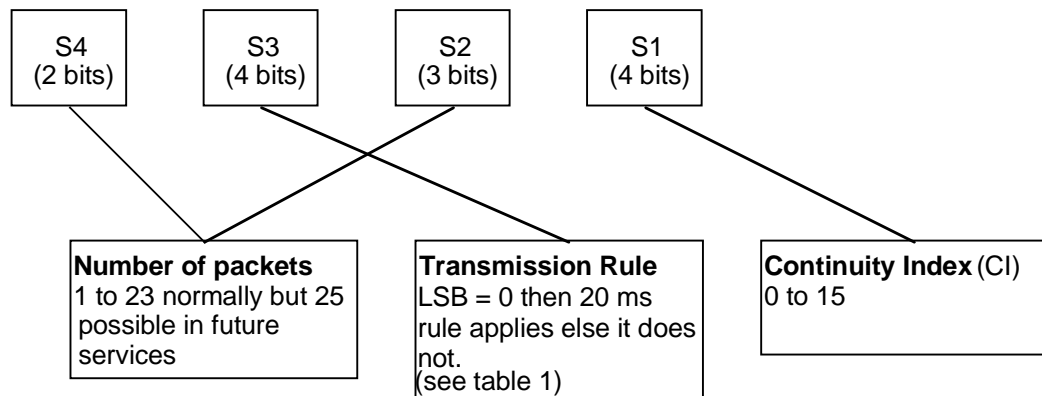


Figure 1: The use of the Teletext page sub-code

The default valid range for the number of packets is 1 to 23 where this value provides the last row which is being transmitted for the page with this particular value for the Continuity Index (CI). The packets of the page are transmitted in ascending address order. There are no missing rows and where a new header is required to complete the page then this shall be provided with the same CI. The maximum number of packets per page is 25 and as a result S2 and S4 will never have values of 7 and 3 simultaneously. Thus the reserved sub-code value of 3F7F defined in ETS 300 706 [1] can never occur. As expected the Least Significant Bit (LSB) of each parameter in the page sub-code is transmitted first. S2 contains least significant 3 bits of the "Number of packets".

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The 20 ms rule requires that the header packet 0 is sent during a previous field. This rule shall be followed when the LSB of S3 is set to 0. When this bit is set to 1 then the header may be followed immediately by the packets associated with this header. The following values have been defined in table 1.

Table 1: Values of S3

Hex value of S3	Interpretation
0	20 ms rule applies - data stream 1
1	no 20 ms rule - data stream 2
2	20 ms rule applies - data stream 3
3	no 20 ms rule - data stream 4
4, 6, 8, A, C & E	20 ms rule applies - data stream 5, 7, 9, 11, 13 & 15 respectively
5, 7, 9, B & D	no 20 ms rule - data stream 6, 8, 10, 12 & 14 respectively
F	reserved for future use, no 20 ms rule applies

In each stream the **CI value** increments modulo 16 for each page which contains different application data.

**Page control bytes C4 to C14;** their action is as follows:

The values for C5, C6, C7, C8, C11, C12, C13 and C14 depend upon the type of service which the network provider is offering and have the same meaning as for normal Teletext pages. The following control bytes in table 2 have a recommended value.

Table 2: Page Control Bits

C4	C9	C10
Erase Page	Interrupted Sequence	Inhibit Display
0	1	1

The next 24 bytes should normally match those of the other pages in the same magazine. This is to avoid possible display problems with viewers of the normal Teletext service which shares this Magazine.

The last 8 bytes of the header shall be used in a way which takes account of the rest of the Teletext service. Where the time can be the same as that on the normal Teletext service it shall be presented in the same format. Where this is not possible these 8 bytes should be filled with spaces. In the case where there is no other Teletext service then the local time shall be placed in these 8 bytes according to the Enhanced Teletext Specification ETS 300 706 [1].

#### 4.4.2 Packets 1 to 23 (in future up to 25)

These packets may carry the data service. The page sub-code indicates to the decoder how many packets to expect. The default maximum number of packets is 23 although future services may be able to use up to 25. Each Teletext packet is constructed in the manner shown in figure 2.

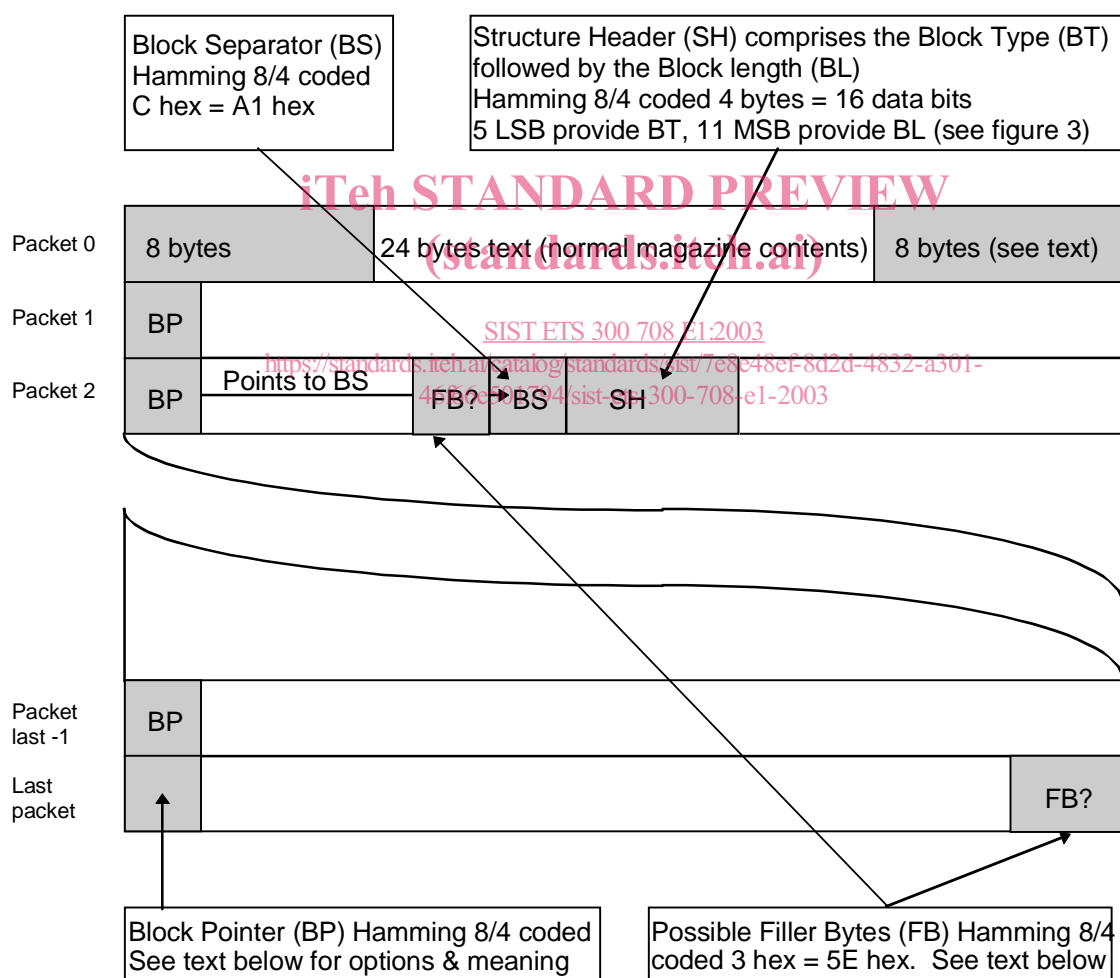


Figure 2: Example of a page according to Page Format - Clear