



SLOVENSKI STANDARD
SIST ETS 300 010-1 E1:2003

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Prenos in multipleksiranje (TM) – Oprema za sinhrono prespajanje za 64 kbit/s in x 64 kbit/s za dostopovne porte s hitrostjo prespajanja 2 048 kbit/s – 1. del: Jedrne funkcije in karakteristike

Transmission and Multiplexing (TM); Synchronous cross connect equipment; 64 kbit/s and n x 64 kbit/s cross connection rate 2 048 kbit/s access ports; Part 1: Core functions and characteristics

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**Transmission and Multiplexing (TM);
Synchronous cross connect equipment
64 and n x 64 kbit/s cross connection rate
2 048 kbit/s access ports
Part 1: Core functions and characteristics**

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

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Contents

Foreword.....	5
1 Scope	7
2 Normative references	7
3 Definitions.....	8
4 Symbols and abbreviations.....	8
5 Network reference configuration	9
6 Reference model.....	10
7 General characteristics.....	10
7.1 Size	11
7.2 Timing signal.....	11
7.2.1 Control of timing signal.....	11
7.2.2 Timing performance.....	11
8 Functions.....	11
8.1 Cross connection	11
8.2 Management.....	11
9 Interfaces.....	12
9.1 2 048 kbit/s interface.....	12
9.1.1 Physical interface.....	12
9.1.2 Frame structure.....	12
9.2 Synchronisation interface at 2 048 kHz.....	12
9.3 Interface with Telecommunication Management Network (TMN)	12
9.4 User interface	12
9.5 Power supply interface	12
10 Frame alignment and CRC procedure	12
10.1 Loss of frame alignment	12
10.2 Recovery of frame alignment.....	12
10.3 CRC multiframe alignment in TS 0	12
10.4 CRC bit monitoring	12
11 Defect or failure conditions and performance monitoring.....	13
11.1 Defect or failure conditions at the A1 reference point and consequent actions at the B1 and A2 reference points.....	13
11.1.1 Defect or failure condition	13
11.1.1.1 Failure of power supply.....	13
11.1.1.2 Loss of incoming signal at 2 048 kbit/s	13
11.1.1.3 Loss of frame alignment.....	13
11.1.1.4 Error ratio 1:10 ⁻³	13
11.1.1.5 Reception of Alarm Indication System (AIS).....	13
11.1.1.6 Defect indication from a remote equipment.....	13
11.1.2 Consequent actions	13
11.2 Defect or failure conditions and consequent actions for the core of the equipment	14
11.2.1 Defect or failure conditions.....	14
11.2.1.1 Failure of a connection	14
11.2.1.2 Loss of synchronisation signal(s).....	14

	11.2.2	Consequent actions	14
11.3		Performance monitoring	15
12		Performance	15
12.1		Blocking factor	16
12.2		Jitter	16
	12.2.1	Jitter at 2 048 kbit/s output.....	16
	12.2.2	Jitter tolerance at 2 048 kbit/s input	16
	12.2.3	Jitter transfer function	16
12.3		Transfer delay.....	16
12.4		Slips.....	17
12.5		Error characteristics of the equipment.....	17
Annex A (normative):		Additional requirements for cross connection of channel associated signalling bits in TS 16	18
Annex B (normative):		Additional TS allocation.....	23
Annex C (normative):		Other timing and slip performance requirements	24
History			25

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Transmission and Multiplexing (TM) Technical Committee of the European Telecommunications Standards Institute (ETSI) in order to meet the requirements of network operators and equipment manufacturers for the deployment and design of synchronous cross connect equipment to be used in synchronous digital leased line networks.

This is Part one of a two-part standard (ETS 300 010) comprising:

ETS 300 010: Synchronous cross connect equipment - 64 and $n \times 64$ kbit/s cross connection rate - 2 048 kbit/s access ports.

ETS 300 010 Part 1: Core functions and characteristics.

ETS 300 010 Part 2: Management.

NOTE: Part 2 of this ETS is under development within ETSI TC-TM.

The corresponding ETS for equipment for cross connection of sub-rate signals is under development.

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1 Scope

Part 1 of this ETS describes requirements of cross connect equipment for use in synchronous digital leased line networks. It covers equipment having 2 048 kbit/s access ports and is limited to the basic functions, external characteristics and performance of the equipment. Requirements for the management of the equipment are to be covered in Part 2 of this ETS (ETS 300 010-2) which should be used in conjunction with this Part of the ETS.

NOTE: Part 2 of this ETS is under development within ETSI TC-TM.

Some network operators may have additional requirements and these are provided in normative Annexes A to C.

2 Normative references

This ETS incorporates by dated or undated reference, 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] CCITT Recommendation G.703 (1991): "Physical/electrical characteristics of hierarchical digital interfaces".
- [2] CCITT Recommendation G.704 (1988): "Synchronous frame structures used at primary and secondary hierarchical levels".
- [3] CCITT Recommendation G.706 (1991): "Frame alignment and cyclic redundancy check (CRC) procedures relating to basic frame structures defined in CCITT Recommendation G.704".
- [4] CCITT Recommendation G.732 (1991): "Characteristics of primary PCM multiplex equipment operating at 2 048 kbit/s".
- [5] CCITT Recommendation G.735 (1988): "Characteristics of primary PCM multiplex equipment operating at 2 048 kbit/s and offering synchronous digital access at 384 and/or 64 kbit/s".
- [6] CCITT Recommendation G.736 (1988): "Characteristics of a synchronous digital multiplex equipment operating at 2 048 kbit/s".
- [7] CCITT Recommendation G.773 (1988): "Protocol suites for Q interface for management of transmission systems".
- [8] CCITT Recommendation G.811 (1988): "Timing requirements at the outputs of primary reference clocks suitable for plesiochronous operation of international digital links".
- [9] CCITT Recommendation G.812 (1988): "Timing requirements at the outputs of slave clocks suitable for plesiochronous operation of international digital links".
- [10] CCITT Recommendation G.822 (1988): "Controlled slip rate objectives on an international digital connection".
- [11] CCITT Recommendation G.823 (1988): "The control of jitter and wander within digital networks which are based on the 2 048 kbit/s hierarchy".
- [12] CCITT Recommendation M.20 (1988): "Maintenance philosophy for telecommunication networks".

- [13] CCITT Recommendation M.3010 (1988): "Principles for a telecommunication management network".
- [14] CCITT Recommendation M.550 (1988): "Performance limits for bringing into service and maintenance of digital paths, sections and line sections".
- [15] CCITT Recommendation O.162: "Specifications for an instrument to monitor the frame alignment signal of frame structures (frame alignment signal monitor)".
- [16] CEPT Recommendation T/TR 02-02, edition 3 (1987): "Rack/telecommunication centre power supply interfaces".

NOTE: This CEPT Recommendation is to be replaced by prETS 300 132 once available ("Equipment Engineering (EE); Power supply interface at the input to the telecommunications equipments (DE/EE-2001)").

- [17] prETS 300 166: "Transmission and Multiplexing; Physical/electrical characteristics of hierarchical digital interfaces for equipment using the 2 048 kbit/s-based plesiochronous or synchronous digital hierarchies (DE/TM-3002)".
- [18] prETS 300 167: "Transmission and Multiplexing; Functional characteristics of 2 Mbit/s interfaces (DE/TM-3006)".

3 Definitions

For the purpose of this ETS the following definitions apply.

Synchronous cross connect equipment: a device which accepts a number of signals comprising synchronously multiplexed lower bit rate signals and cross connects the constituent lower bit rate signals.

Blocking factor: the existence of cross connections in a cross connect equipment can block the establishing of any new cross connection. The blocking factor is the probability that a new cross connection cannot be made, expressed as a decimal fraction of 1.

Synchronisation signal: a clock control signal obtained from a synchronisation network.

Access port: access ports of a cross connect equipment are input and output ports used to terminate 2 048 kbit/s signals transporting synchronous 64 and $n \times 64$ kbit/s signals to be cross connected.

4 Symbols and abbreviations

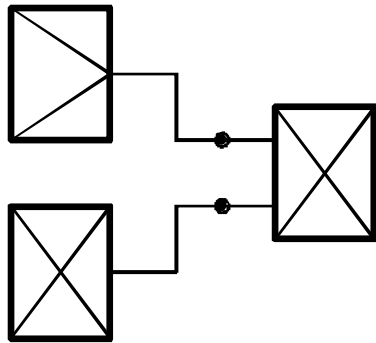
For the purpose of this ETS the following symbols and abbreviations apply.

AIS	Alarm Indication Signal
CRC	Cyclic Redundancy Check
CRC4	Cyclic Redundancy Check procedure relating to the 2 048 kbit/s basic frame structure according to CCITT Recommendation G.704 [2]
EFS	Error Free Signal
FAS	Frame Alignment Signal
fr0	Frame 0
ppm	part per million
SES	Severely Errored Second

TMN	Telecommunication Management Network
TS	Time Slot
TS16	Time Slot 16
TS0 NFAS	Time Slot 0 without Frame Alignment Signal
UI	Unit Interval

5 Network reference configuration

Figure 1 gives typical representation of the cross connect equipment in its network environment.



Synchronous Cross Connect Equipment



Multiplexing Equipment, e.g., according to CC-ITT Recommendation G.736 [6]
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2 048 kbit/s interface

Figure 1: Network reference configuration