# SLOVENSKI STANDARD
# SIST ETS 300 371 E2:2005

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**Prenos in multipleksiranje (TM) - Informacijski model pleziohrone digitalne hierarhije (PDH), gledano s strani omrežnega elementa (NE)**

Transmission and Multiplexing (TM); Plesiochronous Digital Hierarchy (PDH) information model for the Network Element (NE) view



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# Transmission and Multiplexing (TM); Plesiochronous Digital Hierarchy (PDH) information model for the Network Element (NE) view



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## Foreword

This European Telecommunication Standard (ETS) was produced by the Transmission and Multiplexing (TM) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS describes the information model for Network Elements (NEs), which use the Plesiochronous Digital Hierarchy (PDH) multiplexing structure.

| Transposition dates | |
|---|---|
| Date of adoption of this ETS: | 6 September 1996 |
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| Date of withdrawal of any conflicting National Standard (dow): | 31 July 1997 |

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## 1 Scope

This European Telecommunication Standard (ETS) defines the information model to be used at the interface between Network Elements (NEs) and management systems, for the management of equipment which use the Plesiochronous Digital Hierarchy (PDH).

This ETS defines:

- the information model for network elements using PDH multiplexing, including PDH interfaces of Synchronous Digital Hierarchy (SDH) network elements.

This ETS does not define:

- the protocol stack to be used for message communication;
- the network level management processes;
- the application contexts;
- the conformance requirements to be met by an implementation of this information model;
- information models for other systems or equipment.

The information model defined in this ETS (and the corresponding message set) is concerned with the management of NEs, the equipment by which they are implemented and the functions contained within them. More precisely, it applies to an equipment domain visible at the element manager to element interface and is only concerned with information available within that domain. Information proper to the domain of a network level management process is not included within this model.

## 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 apply.



[1] ETS 300 337 (1995): "Transmission and Multiplexing (TM); Generic frame structures for the transport of various signals (including Asynchronous Transfer Mode (ATM) cells and Synchronous Digital Hierarchy (SDH) elements) at the CCITT Recommendation G.702 hierarchical rates of 2 048 kbit/s, 34 368 kbit/s and 139 264 kbit/s".

[2] ITU-T Recommendation G.702 (1988): "Digital hierarchy bit rates".

[3] ITU-T Recommendation M.3100 (1992): "Generic network information model".

[4] ITU-T Recommendation X.721 (1991): "Information technology - Open Systems Interconnection - Structure of management information: Definition of management information".

[5] ITU-T Recommendation G.707 (1993): "Synchronous Digital Hierarchy bit rates".

[6] ITU-T Recommendation G.708 (1993): "Network-Node Interface for the synchronous digital hierarchy".

[7] ITU-T Recommendation G.709 (1993): " Synchronous Multiplexing Structure".

[8] ITU-T Recommendation M.3010: "Principles for a telecommunication management network".

[9] ITU-T Recommendation G.783 (1993): "Characteristics of Synchronous Digital Hierarchy (SDH) equipment functional blocks".

[10] ITU-T Recommendation G.784 (1993): "Synchronous Digital Hierarchy (SDH) Management".

[11] ITU-T Recommendation X.722 (1992): "Information technology - Open Systems Interconnection - Structure of Management Information: Guidelines for the definition of managed objects".

[12] ITU-T Recommendation X.208 (1990): "Specification of Abstract Syntax Notation One (ASN.1)".

[13] ITU-T Recommendation X.720 (1992): "Information technology - Open Systems Interconnection - Structure of management information: Management information model".

[14] ITU-T Recommendation G.774 (1992): "SDH Management Information Model for the Network Element View".

[15] ITU-T Recommendation Q.822 (1993): "Stage 1, stage 2 and stage 3 description for the Q3 interface - Performance management".

[16] ITU-T Recommendation X.701 (1992): "Information technology - Open Systems Interconnection - Systems management overview".

[17] ITU-T Recommendation X.710 (1991): "Common management information service definition for CCITT applications".

[18] ITU-T Recommendation X.711 (1991): "Common management information protocol specification for CCITT applications".

[19] ITU-T Recommendation X.731 (1992): "Information technology - Open Systems Interconnection - Systems Management: State management function".

[20] ITU-T Recommendation X.730 (1992): "Information technology - Open Systems Interconnection - Systems Management: Object management function".

[21] ITU-T Recommendation X.733 (1992): "Information technology - Open Systems Interconnection - Systems Management: Alarm reporting function".

[22] ITU-T Recommendation X.734 (1992): "Information technology - Open Systems Interconnection - Systems Management: Event report management function".

[23] ITU-T Recommendation X.735 (1992): "Information technology - Open Systems Interconnection - Systems Management: Log control function".

[24] ITU-T Recommendations G.803: "Architectures of transport networks based on the synchronous digital hierarchy (SDH)".

[25] ITU-T Recommendation G.773 (1993): "Protocol suites for Q-interfaces for management of transmission systems".

[26] ITU-T Recommendation Q.811 (1993): "Lower layer protocol profiles for the Q3 interface".

[27] ITU-T Recommendation Q.812 (1993): "Upper layer protocol profiles for the Q3 interface".

[28] ITU-T Recommendation M.60 (1993): "Maintenance terminology and definitions".

[29] ETS 300 304 (1994): "Transmission and Multiplexing (TM); Synchronous Digital Hierarchy (SDH) information model for the Network Element (NE) view".

[30] ETS 300 371 Edition 1 (1994): "Transmission and Multiplexing (TM); Plesiochronous Digital Hierarchy (PDH) information model for the Network Element (NE) view".

[31] ITU-T Recommendation G.831 (1993): "Management capabilities of transport networks based on the synchronous digital hierarchy (SDH)".

## 3 Abbreviations

For the purposes of this ETS, the following symbols and abbreviations apply.

| | |
|---|---|
| AIS | Alarm Indication Signal |
| AP | Access Point |
| ASN.1 | Abstract Syntax Notation No. 1 |
| ATM | Asynchronous Transfer Mode |
| CMIP | Common Management Information Protocol |
| CMIS | Common Management Information Service |
| CP | Connection Point |
| CTP | Connection Termination Point |
| EBER | Excessive Bit Error Ratio |
| FERF | Far End Receive Failure |
| LOF | Loss Of Frame |
| LOS | Loss Of Signal |
| NE | Network Element |
| OS | Operation System |
| OSI | Open System Interconnection |
| PDH | Plesiochronous Digital Hierarchy |
| Pkg | Package |
| PPA | Plesiochronous Physical Adaptation |
| PPI | Plesiochronous Physical Interface |
| PPT | Plesiochronous Physical Termination |
| RAI | Remote Alarm Indication |
| RDN | Relative Distinguished Name |
| SDH | Synchronous Digital Hierarchy |
| Snk | Sink |
| Src | Source |
| STM-N | Synchronous Transport Module N |
| TMN | Telecommunications Management Network |
| TP | Termination Point |
| TTP | Trail Termination Point |
| VC-n | Virtual Container n |

# 4 Registration supporting Abstract Syntax Notation No. 1 (ASN.1) for ETS 300 371

```
ASN1TypeModule {ccitt(0) identified-organization(4) etsi(0) ets371(371) informationModel(0)
asn1Module(2) asn1TypeModule(0)}
DEFINITIONS IMPLICIT TAGS ::= BEGIN
-- EXPORT Everything
prETS300371 OBJECT IDENTIFIER ::= {ccitt(0) identified-organization(4) etsi(0) ets371(371)
informationModel(0)}
etsObjectClass OBJECT IDENTIFIER ::= {prETS300371 managedObjectClass(3)}
etsPackage OBJECT IDENTIFIER ::= {prETS300371 package(4)}
etsNameBinding OBJECT IDENTIFIER ::= {prETS300371 nameBinding(6)}
etsAttribute OBJECT IDENTIFIER ::= {prETS300371 attribute(7)}
etsAction OBJECT IDENTIFIER ::= {prETS300371 action(9)}
etsNotification OBJECT IDENTIFIER ::= {prETS300371 notification(10)}
END
```

# 5 PDH fragment

This clause provides managed objects required to model PDH interfaces.

## 5.1 Object classes definitions

### 5.1.1 Electrical PDH physical interface

This subclause describes the object classes required to model the PDH physical interface.

NOTE: Whether these require attributes to model more features (e.g. PDH level, line code, etc.) is for further study.

```
pPITTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM "Recommendation M.3100: 1992":trailTerminationPointBidirectional,
                            pPITTPSink,
                            pPITTPSource;

REGISTERED AS { etsObjectClass 1};

pPITTPSink MANAGED OBJECT CLASS
DERIVED FROM "Recommendation M.3100:1992":trailTerminationPointSink;
CHARACTERIZED BY
    "Recommendation X.721:1991":administrativeStatesPackage,
    "Recommendation M.3100:1992":createDeleteNotificationsPackage,
    "Recommendation M.3100:1992":stateChangeNotificationPackage,
    "Recommendation M.3100:1992":tmnCommunicationsAlarmInformationPackage,
    "Recommendation M.3100:1992":userLabelPackage,

    pPITTPSinkPkg  PACKAGE
        BEHAVIOUR
        pPITTPSinkBehaviourPkg BEHAVIOUR
            DEFINED AS
        "This managed object class represents the point where the incoming interface signal
        is converted into an internal logic level and the timing is recovered from the line
        signal. The upStream connectivity pointer is NULL for an instance of this class.
        A communicationsAlarm notification shall be issued if a Loss of Signal (LOS) is
        detected. The probableCause parameter of the notification shall indicate LOS.
        The operational state is disabled if a LOS is detected";;
    ATTRIBUTES
    pPITTPId            GET;;;

REGISTERED AS { etsObjectClass 2 };

pPITTPSource MANAGED OBJECT CLASS
DERIVED FROM "Recommendation M.3100:1992":trailTerminationPointSource;
CHARACTERIZED BY
    "Recommendation M.3100:1992":createDeleteNotificationsPackage,
    "Recommendation M.3100:1992":userLabelPackage,
    pPITTPSourcePkg  PACKAGE
        BEHAVIOUR
        pPITTPSourceBehaviourPkg BEHAVIOUR
            DEFINED AS
        "This managed object class represents the point where the internal logic level and
        the timing is converted into a line signal. The downStream connectivity pointer is NULL
        for an instance of this class.";;
    ATTRIBUTES
    pPITTPId            GET;;;

REGISTERED AS { etsObjectClass 3 };
```