



# SLOVENSKI STANDARD SIST ETS 300 371 E1:2005

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**Prenos in multipleksiranje (TM) - Informacijski model pleziorhronne 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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# EUROPEAN TELECOMMUNICATION STANDARD

## ETS 300 371

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**for the Network Element (NE) view**

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European Telecommunications Standards Institute

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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 latest announcement of this ETS (doa):	28 February 1995
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 August 1995
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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 and 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] ETS 300 337: "Transmission and Multiplexing (TM); Generic frame structures for the transport of various signals (including Asynchronous Transfer Mode (ATM) cells) at the CCITT Recommendation G.702 hierarchical rates of 2 048 kbit/s, 34 368 kbit/s and 139 264 kbit/s".
- [2] CCITT Recommendation G.702 (1988): "Digital hierarchy bit rates".
- [3] CCITT Recommendation M.3100 (1992): "Generic network information model".
- [4] CCITT Recommendation X.721 (1992): "Information technology - Open Systems Interconnection - Structure of Management Information: Definition of management information".

### 3 Abbreviations

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

AIS	Alarm Indication Signal
AP	Access Point
ASN.1	Abstract Syntax Notation One
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 One (ASN.1) for ETS 300 371

```

ASN1TypeModule {ccitt(0) identified-organization(4) etsi(0) ets(371) informationModel(0)
asn1Module(2) asn1TypeModule(0)}
DEFINITIONS IMPLICIT TAGS ::= BEGIN
-- EXPORTS everything
eTS300371 OBJECT IDENTIFIER ::= {ccitt(0) identified-organization(4) etsi(0)
ets(371)
informationModel(0)}
etsObjectClass OBJECT IDENTIFIER ::= {eTS300371 managedObjectClass(3)}
etsPackage OBJECT IDENTIFIER ::= {eTS300371 package(4)}
etsNameBinding OBJECT IDENTIFIER ::= {eTS300371 nameBinding(6)}
etsAttribute OBJECT IDENTIFIER ::= {eTS300371 attribute(7)}
etsAction OBJECT IDENTIFIER ::= {eTS300371 action(9)}
etsNotification OBJECT IDENTIFIER ::= {eTS300371 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 "CCITT Recommendation M.3100: 1992":trailTerminationPointBidirectional,
                                                    pPITTPSink,
                                                    pPITTPSource;

REGISTERED AS {etsObjectClass 1};

pPITTPSink MANAGED OBJECT CLASS
DERIVED FROM "CCITT Recommendation Recommendation M.3100:1992":trailTerminationPointSink;
CHARACTERIZED BY
  "CCITT Recommendation Recommendation M.3100:1992":administrativeOperationalStatesPackage,
  "CCITT Recommendation Recommendation M.3100:1992":createDeleteNotificationsPackage,
  "CCITT Recommendation Recommendation M.3100:1992":stateChangeNotificationPackage,
  "CCITT Recommendation Recommendation M.3100:1992":tmnCommunicationsAlarmInformationPkg,
  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 "CCITT Recommendation M.3100:1992":trailTerminationPointSource;
CHARACTERIZED BY
  "CCITT Recommendation M.3100:1992":createDeleteNotificationsPackage,
  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};
```

#### 5.1.2 European PDH Alarm Indication Signal (AIS) trail termination point

This generic object class represents a particular case of termination point used in a managed element where no connectivity at respective level is provided. Instances of this object class are used when, in one layer, no flexibility is provided, but a direct adaptation to client is present.

The sink object class includes the AIS monitoring function of a respective Connection Termination Point (CTP) which is not instantiated where no connectivity on the respective level is provided. A communicationsAlarm notification shall be issued if an AIS is detected. The probableCause parameter of the notification shall indicate AIS.

Object classes inherited from this class are labelled according to the European PDH hierarchy (exTP, where:

Table 1

Value of x	Bit rate
0	64 kbit/s
1	2 Mbit/s
2	8 Mbit/s
3	34 Mbit/s
4	140 Mbit/s

**NOTE:** The possibility of adding conditional packages (present if the equipment supports the features) in order to model the capability to reveal Far End Receive Failure (FERF) and Excessive Bit Error Ratio (EBER) is for further study.

```
ePDHATTPSink MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSink;
CHARACTERIZED BY
ePDHTTPSinkPkg PACKAGE
BEHAVIOUR ePDHATTPSinkBehaviourPkg BEHAVIOUR
    DEFINED AS
    "This object class includes the AIS monitoring function of a respective
    CTP which is not instantiated where no connectivity on the respective
    level is provided.
    A communicationsAlarm notification shall be issued if an AIS is detected.
    The probableCause parameter of the notification shall indicate AIS.
    An instance of this object class is used when, in one layer, no
    flexibility is provided, but a direct adaptation to client is present.
    The upStream connectivity pointer attribute value of an instance of this
    object class is equal to NULL.
    The operational state is disabled when an AIS is detected.";;;
REGISTERED AS {etsObjectClass 4};
```

```
ePDHATTPSource MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPSource;
CHARACTERIZED BY
ePDHTTPSourcePkg PACKAGE
BEHAVIOUR ePDHATTPSourceBehaviourPkg BEHAVIOUR
    DEFINED AS
    "The downStream connectivity pointer attribute value of an instance of
    this object class is equal to NULL.";;;
REGISTERED AS {etsObjectClass 5};
```

```
ePDHATTPBidirectional MANAGED OBJECT CLASS
DERIVED FROM ePDHTTPBidirectional,
    ePDHATTPSink,
    ePDHATTPSource;
REGISTERED AS {etsObjectClass 6};
```

### 5.1.3 European PDH connection termination point

This subclause describes an object class (sink, source or bidirectional) which represents the model for a generic PDH connection termination point (64 kbit/s, 2 Mbit/s, 8 Mbit/s, 34 Mbit/s and 140 Mbit/s).

Object classes inherited from this class are labelled according to the European PDH hierarchy (exTP, where:

Table 2

Value of x	Bit rate
0	64 kbit/s
1	2 Mbit/s
2	8 Mbit/s
3	34 Mbit/s
4	140 Mbit/s