

BS EN 62379-5-1:2014



BSI Standards Publication

# Common control interface for networked digital audio and video products

Part 5-1: Transmission over networks —  
General

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**National foreword**

This British Standard is the UK implementation of EN 62379-5-1:2014. It is identical to IEC 62379-5-1:2014.

The UK participation in its preparation was entrusted to Technical Committee EPL/100, Audio, video and multimedia systems and equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

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**Common control interface for networked digital audio and video products - Part 5-1: Transmission over networks - General  
(IEC 62379-5-1:2014)**

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(IEC 62379-5-1:2014)

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## Foreword

The text of document 100/2107/CDV, future edition 1 of IEC 62379-5-1, prepared by technical area 4 "Digital system interfaces and protocols", of IEC/TC 100 "Audio, video and multimedia systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62379-5-1:2014.

The following dates are fixed:

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-08-13

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In the official version, for Bibliography, the following note has to be added for the standard indicated :

|           |      |                                |
|-----------|------|--------------------------------|
| IEC 62379 | NOTE | Harmonized in EN 62379 series. |
|-----------|------|--------------------------------|

## **Annex ZA**

(normative)

### **Normative references to international publications with their corresponding European publications**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

| <u>Publication</u> | <u>Year</u> | <u>Title</u>                                                                                                                | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------|--------------|-------------|
| IEC 62379-1        | 2007        | Common control interface for networked digital audio and video products - Part 1: General                                   | EN 62379-1   | 2007        |
| IEC 62379-5-2      | 2014        | Common control interface for networked digital audio and video products - Part 5-2: Transmission over networks - Signalling | EN 62379-5-2 | 2014        |

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## INTRODUCTION

### Structure of the family of standards

IEC 62379 specifies the common control Interface, a protocol for managing networked audiovisual equipment. The following parts exist or are planned:

- 1 General
- 2 Audio
- 3 Video
- 4 Data
- 5 Transmission over networks
- 6 Packet transfer service
- 7 Measurement

IEC 62379-1:2007, specifies aspects which are common to all equipment, and it includes an introduction to the common control interface.

IEC 62379-2:2008, IEC 62379-3 (under consideration) and IEC 62379-4 (under consideration) specify control of internal functions specific to equipment carrying particular types of live media. IEC 62379-4 refers to time-critical data such as commands to automation equipment, but not to packet data such as the control messages themselves.

IEC 62379-5 specifies control of transmission of these media over each individual network technology. It includes network specific management interfaces along with network specific control elements that integrate into the control framework.

IEC 62379-5-1, (this standard) specifies management of aspects which are common to all network technologies.

IEC 62379-5-2 specifies protocols which can be used between networking equipment to enable the setting up of calls which are routed across different networking technologies.

IEC 62379-5-3, onwards, specify management of aspects which are particular to individual networking technologies.

IEC 62379-6, specifies carriage of control and status messages and non-audiovisual data over transports that do not support audio and video, such as RS232 serial links, with (as for IEC 62379-5) a separate subpart for each technology.

IEC 62379-7 specifies aspects that are specific to the measurement of the service experienced by audio and video streams and in particular to the requirements of EBU ECN-IPM Measurements Group.

# COMMON CONTROL INTERFACE FOR NETWORKED DIGITAL AUDIO AND VIDEO PRODUCTS –

## Part 5-1: Transmission over networks – General

### 1 Scope

This part of IEC 62379 specifies aspects of the common control interface that are common to all network technologies, including setting up and tearing down of sessions and the service provided by the network.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62379-1:2007, *Common control interface for networked digital audio and video products – Part 1: General*

IEC 62379-5-2:2014, *Common control interface for networked digital audio and video products – Part 5-2: Transmission over networks – Signalling*

### 3 Terms, definitions and abbreviations

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62379-1 and IEC 62379-5-2, as well as the following apply.

##### 3.1.1

##### **media port**

source or destination of media data in an interface unit

Note 1 to entry: A media port is either a physical port (e.g. an external audio or video connector on the unit) or a logical port (e.g. an internal connection to another part of the unit).

##### 3.1.2

##### **switch**

network element which routes media data and other messages between links

#### 3.2 Abbreviations

TCP          Transmission Control Protocol <sup>a</sup>

UDP          User Datagram Protocol <sup>b</sup>

MIB          Management Information Base

<sup>a</sup>          See RFC 793.

<sup>b</sup>          See RFC 768.

## 4 Network service specifications

### 4.1 Service for live media

Live media (including status broadcasts) shall be transmitted using a service for which, if the network supports it, guaranteed levels of throughput, delay, and data loss shall be requested.

### 4.2 Service for management messages

Management messages should be transmitted in data units on an asynchronous flow as specified in IEC 62379-5-2. If no such service is available, a connectionless datagram service such as UDP may be used.

Where a connection-oriented service is used, at least one call at each privilege level shall be accepted by a destination unit at any given time. If more calls at one privilege level are accepted, this shall not prevent the acceptance of at least one call at each other privilege level.

## 5 MIB definitions applicable to all networks

### 5.1 General

The structure of the MIB shall be as specified in IEC 62379-1.

### 5.2 Type definitions

The following application-wide types shall be used:

```
NetPortState ::= INTEGER {
    disabled          (1),
    closing           (2),
    linkDown          (3),
    linkUp            (4), -- does not know to what linked
    pointToPoint      (5), -- link is point-to-point
    peerGroup         (6), -- e.g. Ethernet hub
    sharedMedia       (7)  -- with master, e.g. 802.11
} (disabled..sharedMedia)
```

```
PortIdentifier ::= OCTET STRING (SIZE(3))
' octet 1 = port type
' octets 2 and 3 = port number (high byte in octet 2)
```

```
ConnectionEnd ::= INTEGER {
    source          (1),
    destination     (2)
} (source..destination)
```

```
CauseCode ::= OBJECT IDENTIFIER
```

NOTE Cause codes may be defined in other parts of the IEC 62379-5 series or elsewhere.

```
ConnectionState ::= INTEGER {
    readyToConnect    (1),
    connectionRequested (2),
    terminating       (3),
    active            (4),
    failed            (5),
    disconnected       (6),
    pending           (7),
    inactive          (8),
    finished          (9),
```

```

    callProceeding      (10),
    receivedOffer       (11),
    acceptedOffer       (12),
    reservationRequested (13),
    clearing            (14)
} (readyToConnect..clearing )

Importance ::= INTEGER (1..255)

Priority ::= INTEGER (1..255)

```

### 5.3 Conceptual row type definitions

The following types are used to specify the syntax of managed objects in this standard that represent conceptual table rows.

```

NetPortEntry ::= SEQUENCE {
    nPortBlockId      BlockId,
    nPortName         Utf8String,
    nPortState        NetPortState,
    nPortAddressType  TDomain,
    nPortAddress       TAddress,
    nPortPAddrType    TDomain,
    nPortPartnerAddr  TAddress,
    nPortBarred       TruthValue
}

UnitSourceEntry ::= SEQUENCE {
    usFlowIdentifier  OCTET STRING,
    usBlockId        SourceBlockId,
    usBlockInput      IndexNumber,
    usPackageSize     CardinalNumber,
    usPrivilege       PrivilegeLevel,
    usState           ConnectionState,
    usCause           CauseCode,
    usSource          Utf8String,
    usDestination     Utf8String,
    usService         Utf8String,
    usImportance      Importance,
    usPriority         Priority,
    usStartTime       DateTime,
    usEndTime         DateTime,
    usConnectTime     CardinalNumber,
    usFlowIdStandard  TruthValue
}

UnitDestEntry ::= SEQUENCE {
    udFlowIdentifier  OCTET STRING,
    udNetBlockId      SourceBlockId,
    udNetBlockOutput  IndexNumber,
    udSourceAddrType  TDomain,
    udSourceAddress    TAddress,
    udPackageSize     CardinalNumber,
    udPrivilege       PrivilegeLevel,
    udState           ConnectionState,
    udCause           CauseCode,
    udSource          Utf8String,
    udDestination     Utf8String,
    udService         Utf8String,
    udImportance      Importance,
    udPriority         Priority,

```

```

udStartTime      DateTime,
udEndTime        DateTime,
udConnectTime    CardinalNumber,
udConnectCount   CardinalNumber,
udRemembered     TruthValue,
udDestBlockId    DestBlockId,
udDestBlockInput IndexNumber,
usFlowIdStandard TruthValue
}

```

## 5.4 MIB object definitions

### 5.4.1 Network ports

#### 5.4.1.1 General

Each physical connection to a network, in a switch or end equipment, shall be represented using a network port block. A network port block shall have one input for each outgoing media flow and one output for each incoming media flow.

The group of objects in Table 1 shall be implemented by all switches. The root node for these objects shall be

```
{ iso(1) standard(0) iec62379(62379) network(5) general (1) networkMIB(1) networkPorts(1) }
```

This node shall be used as the block type identifier for network port blocks.

**Table 1 – Managed objects for network ports**

| Identifier            | Syntax                   | Index | Readable | Writable   | Volatile | Syntax    |
|-----------------------|--------------------------|-------|----------|------------|----------|-----------|
| netPortTable(1)       | SEQUENCE OF NetPortEntry |       | none     | none       | yes      | mandatory |
| └netPortEntry(1)      | NetPortEntry             |       | none     | none       | yes      | mandatory |
| └└nPortBlockId(1)     | BlockId                  | yes   | none     | none       | no       | mandatory |
| └└nPortName(2)        | Utf8String               |       | listener | supervisor | no       | mandatory |
| └└nPortState(3)       | NetPortState             |       | listener | supervisor | yes      | mandatory |
| └└nPortAddressType(4) | TDomain                  |       | listener | none       | no       | mandatory |
| └└nPortAddress(5)     | TAddress                 |       | listener | none       | no       | mandatory |
| └└nPortPAddrType(6)   | TDomain                  |       | listener | none       | yes      | mandatory |
| └└nPortPartnerAddr(7) | TAddress                 |       | listener | none       | yes      | mandatory |
| └└nPortBarred(8)      | TruthValue               |       | listener | supervisor | no       | mandatory |

#### 5.4.1.2 netPortTable

A table of network port descriptors for this unit. Each physical network port on the unit shall have a corresponding entry in this table. There may also be entries for "virtual" network ports.

#### 5.4.1.3 netPortEntry

An entry in the network port table.

#### 5.4.1.4 nPortBlockId

The block identifier for this port. Used as an index when accessing the network port table.

#### 5.4.1.5 nPortName

The name assigned to this port. This is an arbitrary text string assigned by the system manager. Such assignment should persist across resets of the unit.

Until a name has been assigned, this object shall have a value that relates to a visible marking associated with the port's physical connector.

Note that the name of a port on a network switch whose connector is labelled "2" on the unit's enclosure should default to a value such as "Port 2" or "Ethernet port 2" or "Front panel port 2". If it is connected to a network socket in, say, studio 6, a supervisor may then rename it as "Studio 6".

#### 5.4.1.6 nPortState

The current link-layer state of the port's network connection.

If a management terminal sets this object to `closing` or `linkDown`, the managed unit shall reroute or, if that is not possible, gracefully close down all calls that pass through the port. In the case of `closing`, the port shall then enter the `disabled` state.

For as long as the port is in `linkDown` state, the managed unit shall attempt to establish a network connection on the port.

#### 5.4.1.7 nPortAddressType

The type of network address used for `nPortAddress`.

#### 5.4.1.8 nPortAddress

An address which identifies the port.

NOTE This will normally be the 48-bit MAC address of the interface. An IP address may be used if it is permanently assigned, but not if it is acquired via DHCP.

#### 5.4.1.9 nPortAddrType

The type of network address used for `nPortPartnerAddr`.

#### 5.4.1.10 nPortPartnerAddr

In `pointToPoint` state, the address of the unit to which the port is connected.

In `sharedMedia` state, the address of the unit which controls the local network to which the port is connected, e.g. wireless base station or clock master.

In other states, the `nPortPartnerAddr` value is not defined by this standard.

NOTE 1 This object is intended to allow a management terminal to "crawl" a network to discover its topology and what resources are present. The address allows it to make a management connection to the link partner in the case of a point-to-point link, or, in the case of a shared-media network segment, to a unit which may be able to supply a list of all the units on the segment. In contrast to `nPortAddress`, the `nPortPartnerAddr` value should identify the unit rather than its interface, so an EUI-64 is appropriate.

NOTE 2 For some kinds of network segment, such as an Ethernet segment using CSMA/CD, there is no straightforward method for enumerating all the units present on the segment.

#### 5.4.1.11 nPortBarred

`false` (the default) if the unit is allowed to connect a route via the port; `true` if forbidden.

## 5.4.2 List of media sources

### 5.4.2.1 General

The “list of sources” has an entry for each synchronous flow transmitted by the managed unit.

The group of objects in Table 2 shall be implemented by all end equipment that can be the source for a synchronous flow, and by all switches. The root node for these objects shall be

```
{ iso(1) standard(0) iec62379(62379) network(5) general(1) networkMIB(1) callSources(2) }
```

NOTE 1 Calls are always connected by the destination, so this table is read-only, apart from the ability to clear down a call from the source end. Management calls are not included in this list.

NOTE 2 It is assumed that incoming calls specify a source in some way that may be at least partially network-dependent, and whenever a new connection is made an entry appears in this table, disappearing again when the call is released.

**Table 2 – Managed objects conveying the list of sources**

| Identifier             | Syntax                      | Index | Readable | Writable | Volatile | Syntax    |
|------------------------|-----------------------------|-------|----------|----------|----------|-----------|
| unitSourceListTable(1) | SEQUENCE OF UnitSourceEntry |       | none     | none     | yes      | mandatory |
| └unitSourceEntry(1)    | UnitSourceEntry             |       | none     | none     | yes      | mandatory |
| └usFlowIdentifier(1)   | OCTET STRING                | yes   | none     | none     | yes      | mandatory |
| └usBlockId(2)          | SourceBlockId               | yes   | listener | none     | yes      | mandatory |
| └usBlockInput(3)       | IndexNumber                 |       | listener | none     | yes      | mandatory |
| └usPackageSize(4)      | CardinalNumber              |       | listener | none     | yes      | mandatory |
| └usPackageRate(5)      | CardinalNumber              |       | listener | none     | yes      | mandatory |
| └usPrivilege(6)        | PrivilegeLevel              |       | listener | none     | yes      | mandatory |
| └usState(7)            | ConnectionState             |       | listener | see 6.3  | yes      | mandatory |
| └usCause(8)            | CauseCode                   |       | listener | see 6.3  | yes      | mandatory |
| └usSource(9)           | Utf8String                  |       | listener | none     | yes      | mandatory |
| └usDestination(10)     | Utf8String                  |       | listener | none     | yes      | mandatory |
| └usService(11)         | Utf8String                  |       | listener | none     | yes      | mandatory |
| └usImportance(12)      | Importance                  |       | listener | none     | yes      | mandatory |
| └usPriority(13)        | Priority                    |       | listener | none     | yes      | mandatory |
| └usStartTime(14)       | DateandTime                 |       | listener | none     | yes      | mandatory |
| └usEndTime(15)         | DateandTime                 |       | listener | none     | yes      | mandatory |
| └usConnectTime(16)     | CardinalNumber              |       | listener | none     | yes      | mandatory |
| └usFlowIdStandard(17)  | TruthValue                  |       | listener | none     | yes      | mandatory |

#### 5.4.2.2 unitSourceListTable

The list of flows for which this unit transmits media data.

NOTE In the case of end equipment, the table lists flows for which the unit is the source. In the case of a switch, it lists information relating to onwards transmission towards the destination(s), for all synchronous flows passing through the unit.

#### 5.4.2.3 unitSourceEntry

An entry in the list of flows for which this unit transmits media data.