SLOVENSKI STANDARD
SIST EN 62379-1:2008

01-februar-2008

Skupni krmilni vmesnik za digitalne avdio in video izdelke, vključene v omrežje - 1. del: Splošno (IEC 62379-1:2007)

Common control interface for networked digital audio and video products -- Part 1: General

Gemeinsame Steuerschnittstelle für netzwerkbetriebene digitale Audio- und Videogeräte -- Teil 1: Allgemeines

Interface de commande commun destiné aux produits audio et video numériques connectés en réseau -- Partie 1: Généralités

Ta slovenski standard je istoveten z: **EN 62379-1:2007**

ICS:

33.160.01	Avdio, video in avdiovizualni sistemi na splošno	Audio, video and audiovisual systems in general
35.200	Vmesniška in povezovalna oprema	Interface and interconnection equipment

SIST EN 62379-1:2008 **en,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62379-1

November 2007

ICS 33.160; 35.100

English version

Common control interface for networked digital audio and video products - Part 1: General

(IEC 62379-1:2007)

Interface de commande commun destiné aux produits audio et video numériques connectés en réseau - Partie 1: Généralités (CEI 62379-1:2007)

Gemeinsame Steuerschnittstelle für netzwerkbetriebene digitale Audio- und Videogeräte - Teil 1: Allgemeines (IEC 62379-1:2007)

This European Standard was approved by CENELEC on 2007-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in two official versions (English and German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 62379-1:2007 E

Foreword

The text of document 100/1248/FDIS, future edition 1 of IEC 62379-1, prepared by IEC TC 100, Audio, video and multimedia systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62379-1 on 2007-10-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2008-07-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2010-10-01

Annex ZA has been added by CENELEC.

_____

Endorsement notice

The text of the International Standard IEC 62379-1:2007 was approved by CENELEC as a European Standard without any modification.

_____

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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

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

Publication	Year	Title	EN/HD	Year
ISO/IEC 646	1991	Information technology - ISO 7-bit coded character set for information interchange	-	-
ISO/IEC 8824-1	2002	Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation	-	-
IEEE Std 802	2001	IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture	-	-
RFC 1157	-[1]	Simple Network Management Protocol (SNMP) (IETF Standard #15)	-	-
RFC 1441	-[1]	Introduction to version 2 of the Internet-standard Network Management Framework (IETF)	-	-
RFC 3411-3418	-[1]	Simple Network Management Protocol version 3 (IETF Standard #62)	-	-

[1] Undated reference.

IEC 62379-1

Edition 1.0 2007-08

INTERNATIONAL STANDARD

Common control interface for networked digital audio and video products – Part 1: General

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRICE CODE XB

ICS 33.160; 35.100

ISBN 2-8318-9279-1

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMON CONTROL INTERFACE FOR NETWORKED DIGITAL AUDIO AND VIDEO PRODUCTS –

Part 1: General

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.

3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.

6) All users should ensure that they have the latest edition of this publication.

7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.

8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62379-1 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this standard is based on the following documents:

FDIS	Report on voting
100/1248/FDIS	100/1281/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

0 Introduction

0.1 Overview

This family of standards specifies a control framework for networked audiovisual equipment.

It provides a means for management entities to control not only transmission across the network but also other functions within interface equipment.

Although it was originally developed for audio over asynchronous transfer mode (ATM) in radio broadcasting, the control framework has been extended to encompass video and other time-critical media, as well as other networking technologies and other applications in both professional and consumer environments.

The control framework provides a number of key features:

- it provides a consistent interface to the functionality in an audiovisual unit;
- it enables systems to be built that are truly "plug and play", by providing the means for equipment to discover what units are connected to the network and what their capabilities are;
- it links discrete areas or blocks of functionality together in a consistent and structured way;
- it allows us to define small focused building blocks from which more complex functionality can be built;
- it ensures new functionality can be developed and integrated consistently and easily into the framework.

The functionality provided by an audiovisual unit is represented using one or more "blocks" (such as a cross-point switch or a gain control), structured and connected together using the control framework.

As a further aid to the "plug-and-play" functionality, a common format for audio and video being conveyed across the network is also specified, to avoid situations in which two pieces of equipment fail to communicate because there is no format which both support. Equipment may, of course, also support other formats appropriate to particular applications, and the standard mechanisms for initiating and terminating communication will work for those formats in the same way as for the standard formats.

0.2 Structure of the family of standards

IEC 62379 is intended to include the following parts:

Part 1: General

Part 2: Audio

Part 3: Video

Part 4: Data

Part 5: Transmission over networks

Part 6: Packet transfer service

Part 1 specifies aspects which are common to all equipment.

Parts 2 to 4 specify control of internal functions specific to equipment carrying particular types of media; in the case of Part 4, this would be time-critical media other than audio and video, for instance, RS232 and RS422 data for applications such as machine control, or the state of

the “on air” light in a broadcast studio. Part 4 does not refer to packet data such as the control messages themselves.

Part 5 specifies control of transmission of these media over each individual network technology, with a separate subpart for each technology. It includes network specific management interfaces along with network specific control elements that integrate into the control framework.

Part 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 with Part 5) a separate subpart for each technology.

0.3 Model of the equipment being controlled

0.3.1 Blocks

A piece of equipment (a "unit") is regarded as being composed of functional elements or "blocks" which may be linked to each other through internal routing.

Blocks may have inputs, outputs and internal functionality. In general, the output of one block connects to the input of the next block in the processing chain. Blocks can have some associated control parameters and/or status monitoring accessible via the control framework management interface.

Figure 1 – A block

A typical block would be a pre-amplifier, which has one input, one output, and a parameter which sets the gain. Another would be a mixer, with several inputs, one output, and parameters to select the contribution of each input to the mix; these parameters are effectively fader settings. A tone generator would have one output and no inputs, and parameters that set the level, frequency, etc.

There is a special class of blocks called "ports"; ports provide an external connection to other equipment. An "input port" is one where audio, video, or other data enters the unit and an "output port" is one where it leaves the unit. Sometimes the port corresponds to a physical connection, for instance, an XLR socket for analogue audio; sometimes it is a virtual entity which can be one end of a connection across a network, or one channel on an interface such as AES10 (MADI) which conveys multiple audio streams.

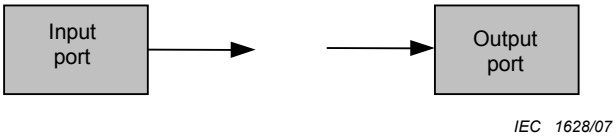

Figure 2 – Ports

An input port has no inputs (or rather, no internal inputs; it will have an external input, but that is not part of the model of the internal structure of the unit) and a single output, which

supplies the incoming stream to the inputs of other blocks. In the case of a network port, parameters would specify the network address; a physical audio port might have parameters which show the sampling rate and bit depth. Similarly, an output port has a single input and no (internal) outputs.

Figure 3 shows an example of how the various blocks connect together within a unit. Note that each input is connected to exactly one output, but an output may be connected to several inputs, or to none.

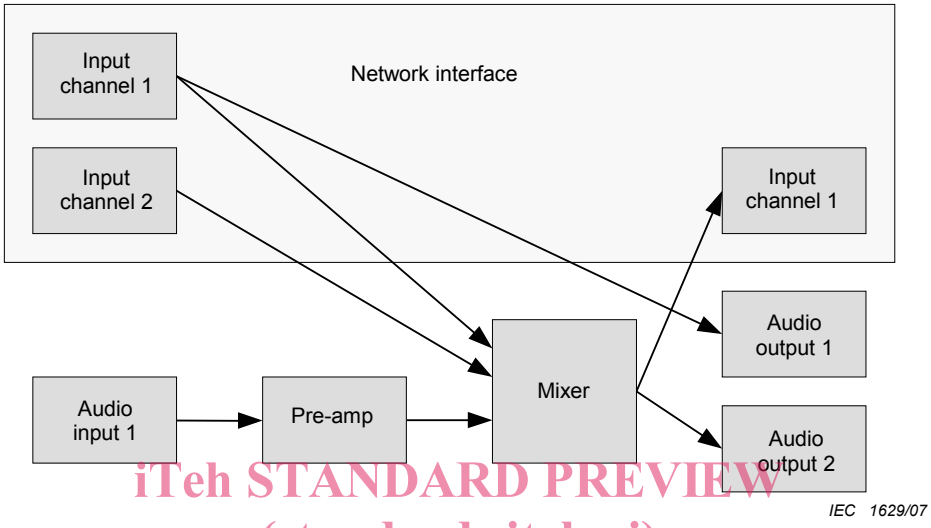

Figure 3 – Example of a "unit"

There is a block which performs a mix between three inputs, two from the network and one from a physical audio port (or, looking at it another way, two from remote sources and one from a local source). The local source is connected via a pre-amplifier. The resulting signal is output locally at output 2 and also transmitted on the network. There is another local output which carries a copy of one of the remote sources.

The set of available blocks, the connectivity between them, and the parameter settings for each may be fixed, or changeable by a management terminal, or read-only but changeable by external factors. Where blocks are implemented in software, a unit may provide the ability for a management terminal to create and delete them. Where blocks are implemented in physical hardware, the blocks themselves cannot be changed but it may still be possible for the management terminal to reprogramme the routing between them.

0.3.2 Control framework

The control framework consists of two lists; a list of blocks (also called control elements), and a list of connections between them. In both lists, an individual block is identified by a "block id", which is a number that is different for each block in a unit.

A block's entry in the list of blocks shows what type of block it is, represented by a globally unique value as described in 0.3.5.

Groups of blocks that are connected together are called processing chains. A processing chain typically represents what a unit does as a whole, so, for instance, a unit that alters the gain of an input to produce an output would have one simple processing chain that consists of an input port connected to a gain block which is connected to an output port.

0.3.3 How the framework helps when designing units

The standard anticipates that many control blocks will be designed and implemented over time to control the many different sorts of functionality audio and audiovisual units provide.

Units can be built from existing blocks or new ones created as required. It will often be possible to represent complex, product-specific control functionality using a number of linked instances of simpler, standard blocks that together provide the functionality required.

0.3.4 How the framework enables "plug and play"

A management terminal simply needs to recognize those blocks that are relevant to the functions it controls. (The term "management terminal" covers a wide variety of equipment, from a broadcast control system to the user interface of a device on a home network.)

It can discover what units are present on the network and what functions each contains; it does not need to recognize the units themselves, only the blocks that describe the functionality in which it is interested.

The discovery process would be:

- to create a list of the units, beginning with those to which it is directly connected; units can be uniquely identified by their 48-bit MAC address;
- to retrieve the list of blocks from each device on the list; if any are network ports which give access to further devices, to add those devices to the list (unless they are already on it);
- to retrieve the connectivity between any blocks for which it is relevant.

For instance, the user interface to a surround-sound audio system might search for units containing audio sources, find those for which a processing chain exists that allows them to be made available to the user, and offer them in a menu. It would also identify functions in the processing chain such as volume control and play-out controls (pause, rewind, skip track, etc.).

In a radio broadcast control system, a similar process could be performed when the system is installed and at any time when equipment is added or replaced. This process would be under the control of the installer, rather than occurring automatically, but should at least relieve the installer of the necessity to type in network addresses.

0.3.5 Defining a new type of block

A block's entry in the block list shows what type of block it is, represented by an object identifier (OID) (see 0.4.2) which is a globally unique value that identifies the block type definition.

The main requirement when adding a new type of block to the control framework is for its block type definition to follow the conditions below:

- the globally unique OID identifies a MIB table or group of MIB tables, with each table containing a variable number of rows.
- the table(s) are indexed using the block id to access control objects associated with individual instances of this block type.

In effect, the framework provides the entry point to controlling each block of functionality. The actual details of how to control that functionality will always need to be specified individually.