



IEC 62379-7

Edition 1.0 2015-06

# INTERNATIONAL STANDARD



---

**Common control interface for networked digital audio and video products –  
Part 7: Measurements**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

---

ICS 33.160; 35.100

ISBN 978-2-8322-2753-4

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	10
2 Normative references.....	10
3 Terms, definitions and abbreviations .....	10
3.1 Terms and definitions .....	10
3.2 Abbreviations .....	10
4 Audio format definitions .....	11
5 Video format definitions .....	11
6 MIB definitions for measurement information blocks .....	11
6.1 General.....	11
6.2 Type definitions.....	12
6.2.1 General .....	12
6.2.2 Textual conventions .....	12
6.2.3 Sequences.....	13
6.3 Network measurement information blocks .....	14
6.3.1 Network measurement information block structure .....	14
6.3.2 nMtBlockTable .....	15
6.3.3 nMtBlockEntry.....	15
6.3.4 nMtBlockId.....	15
6.3.5 nMtIfIndex.....	15
6.3.6 nMtTxRxPoint .....	15
6.3.7 nMtNetworkType .....	16
6.3.8 nMtTransportType.....	16
6.3.9 nMtTxRxAddr .....	16
6.3.10 nMtPortNumber.....	16
6.3.11 nMtIGMPVersion.....	16
6.3.12 nMtSIPServerAddr .....	16
6.4 Audio measurement information blocks.....	17
6.4.1 Audio measurement information block structure .....	17
6.4.2 aMtBlockTable .....	17
6.4.3 aMtBlockEntry.....	17
6.4.4 aMtBlockId.....	18
6.4.5 aMtAudioComponentNumber.....	18
6.4.6 aMtNetworkBlockId .....	18
6.4.7 aMtAudioStatus.....	18
6.4.8 aMtAudioSignalFormat .....	18
6.4.9 aMtAudioPId .....	18
6.4.10 aMtIfIndex.....	18
6.4.11 aMtFECType .....	19
6.4.12 aMtFECLengthDimension .....	19
6.5 Video measurement information blocks.....	19
6.5.1 Video measurement information block structure .....	19
6.5.2 vMtBlockTable .....	20

6.5.3	vMtBlockEntry .....	20
6.5.4	vMtBlockId .....	20
6.5.5	vMtAudioBlockId .....	20
6.5.6	vMtNetworkBlockId .....	20
6.5.7	vMtVideoStatus .....	20
6.5.8	vMtVideoSourceFormat .....	20
6.5.9	vMtVideoCodingType .....	21
6.5.10	vMtVideoBitRateType .....	21
6.5.11	vMtVideoBitRate .....	21
6.5.12	vMtVideoAspectRatio .....	21
6.5.13	vMtFECType .....	21
6.5.14	vMtFECLengthDimension .....	21
6.5.15	vMtTrickModeSupport .....	21
6.6	Receiver point measurement information block .....	21
6.6.1	Receiver measurement information block structure .....	21
6.6.2	rxPointTable .....	22
6.6.3	rxPointEntry .....	23
6.6.4	rxPointBlockId .....	23
6.6.5	rxPointNetworkBlockId .....	23
6.6.6	rxPointBufferSize .....	23
6.6.7	rxPointBufferOcpancyTime .....	23
6.6.8	rxPointBufferOcpnacyPcnt .....	23
6.6.9	rxPointMDI .....	23
6.6.10	rxPointTSDF .....	23
6.7	Temperature measurement information block .....	23
6.7.1	Temperature measurement information block structure .....	23
6.7.2	temperatureTable .....	24
6.7.3	temperatureEntry .....	24
6.7.4	temperatureBlockId .....	24
6.7.5	temperatureLocnNumber .....	25
6.7.6	temperatureLocation .....	25
6.7.7	temperatureTrend .....	25
6.7.8	temperatureStatus .....	25
6.7.9	temperatureLowWarning .....	25
6.7.10	temperatureHighWarning .....	25
6.7.11	temperatureLowCritical .....	25
6.7.12	temperatureHighCritical .....	25
Annex A (informative)	Machine-readable measurement block definitions .....	26
Annex B (informative)	Machine-readable textual conventions definitions .....	44
Annex C (informative)	Worked example .....	48
C.1	Overview .....	48
C.2	Example 1 .....	48
C.2.1	General .....	48
C.2.2	Block table .....	48
C.2.3	Mixer block .....	50
C.2.4	Multiple functionality device .....	51
C.2.5	Summary of tables .....	54
Bibliography	.....	55

Figure 1 – Relationships between ECN groups ACIP, VCIP and IPM .....	8
Figure 2 – Network measurement information block .....	14
Figure 3 – Audio measurement information block.....	17
Figure 4 – Video measurement information block.....	19
Figure 5 – Receiver measurement information block.....	22
Figure 6 – Temperature measurement information block .....	24
Figure C.1 – Example of a modified audio device.....	48
Figure C.2 – Annotated connector diagram.....	49
Figure C.3 – Mixer section .....	50
Figure C.4 – Single device with multiple functionality .....	52
Figure C.5 – Measurement blockIds and their associated media components .....	52
Figure C.6 – Single device with multiple functionality .....	53
 Table 1 – Managed objects for network measurement information blocks .....	15
Table 2 – Managed objects for audio measurement information blocks.....	17
Table 3 – Managed objects for video measurement information blocks.....	20
Table 4 – Managed objects for receiver measurement information blocks.....	22
Table 5 – Managed objects conveying temperature information about the unit.....	24
Table C.1 – Main block Id table .....	49
Table C.2 – Mixer related block Id table .....	50
Table C.3 – Mixer block tables .....	51
Table C.4 – Addition of measurement block Ids .....	52
Table C.5 – Video measurement table .....	53
Table C.6 – Network measurement table .....	53
Table C.7 – Audio measurement table.....	53
Table C.8 – Table summary .....	54

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**COMMON CONTROL INTERFACE FOR NETWORKED  
DIGITAL AUDIO AND VIDEO PRODUCTS –****Part 7: Measurements****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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 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 62379-7 has been prepared by technical area 4: Digital system interfaces and protocols of IEC technical committee 100: Audio, video and multimedia systems and equipment.

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

CDV	Report on voting
100/2168/CDV	100/2338/RVC

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.

A list of all parts in the IEC 62379 series, published under the general title *Common control interface for networked digital audio and video products*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

## INTRODUCTION

IEC 62379 specifies the common control interface, a protocol for managing equipment which conveys audio and/or video across digital networks.

An introduction to the common control interface is given in IEC 62739-1.

This part of IEC 62379 specifies those aspects that are specific for using the block structure as defined in IEC 62379-1, for standardising the collection method of audio and video parameters for use by the European Broadcasting Union Expert Communities Networks – Internet Protocol (IP) Measurements (EBU ECN-IPM) Group.

The collection of network related parameters may be outside the scope of this standard. These are expected to be collected from the standard Internet Engineering Task Force (IETF) Management Information Base (MIBs) that are generally present in most (if not all) networked equipment. Some specific network parameters are included that are not obtainable from existing standard IETF MIBs.

### **Structure of the family of standards**

IEC 62379 specifies the common control interface, a protocol for managing networked audiovisual equipment. It 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 7: Measurement

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 live media. 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. 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.

Part 7 specifies those aspects that are specific to the measurement requirements of the EBU ECN-IPM Group.

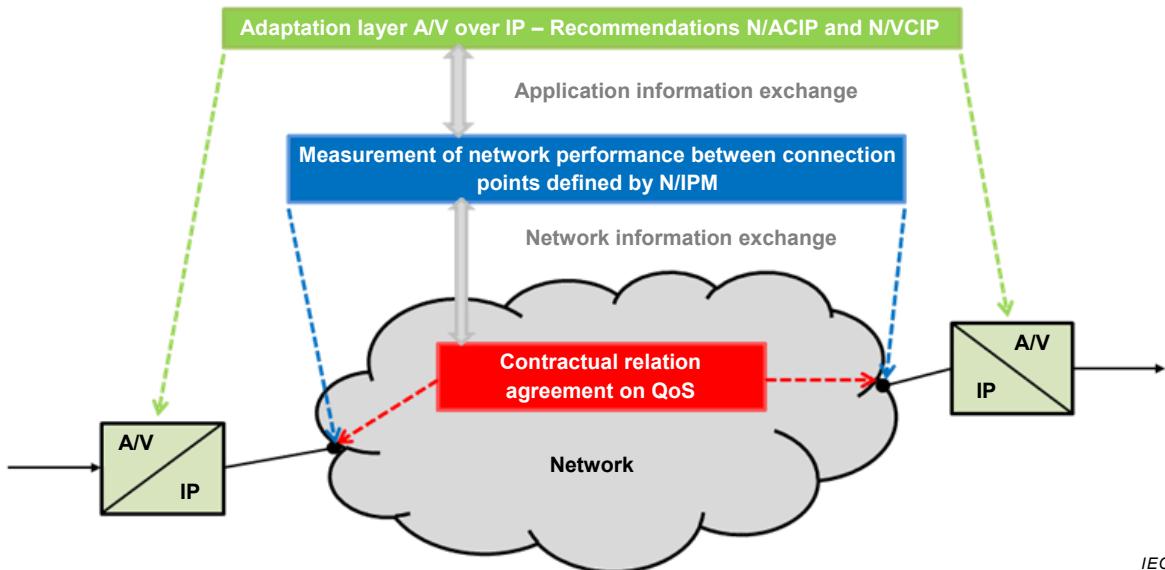
An introduction to the common control interface is given in IEC 62739-1.

### **Description, aims and requirements of the EBU ECN-IPM Group**

In recent years, EBU members have been increasingly adopting IP networks for the contribution of audio and video in real-time. It is well known that although IP networks are of lower cost and provide more flexibility compared with circuit switched networks, they suffer

from longer delays and have much larger jitter, while broadcasters' tolerance to these variables is much less than that of normal business IT traffic.

To respond to Members' use of IP, EBU set up two groups, *Expert Communities Networks Audio contribution over IP (ECN-ACIP)* and *Expert Communities Networks – Video contribution over IP (ECN-VCIP)*, with the tasks of drawing up recommended codes of practice<sup>1</sup>.



**Figure 1 – Relationships between ECN groups ACIP, VCIP and IPM**

It was also recognised that there would be a strong demand for tools that would enable broadcasters to measure and manage their IP networks properly to suit the many time-critical broadcast applications they would be subjected to. To this end, the ECN-IPM (IP measurement) group was set up. The relationships between these three groups are shown in Figure 1.

The goals of ECN-IPM Group were to

- define a quality of service classification to achieve requested A/V transmission quality for broadcast applications,
- standardise network information exchange between EBU members and Telecom suppliers,
- propose a method of collecting end-to-end performance information for management purposes.

In achieving these goals the ECN-IPM Group has specified a set of parameters that are important for broadcasters when using IP networks for audio and video transmission and has developed a software mechanism to probe a network for device and topology discovery, physical path tracing for both end-to-end communication and multicast streams, with the potential for multilayer monitoring for streams on a multi-vendor network with fully media-specific parameters.

The specified parameters cover both the network layer and application layer (for video and audio). SNMP is employed to collect information on the status of networked devices, such as the transmission rate, error rate, the codec used and multicast streams status.

<sup>1</sup> ECN-ACIP and ECN-VCIP were formerly known as N/ACIP and N/VCIP respectively.

To ensure that all the parameters can be recovered from a variety of different manufacturers' IP equipment, the group has designed a Management Information Base (MIB). Although many MIB files have been published over the years, especially on the network side, very little standardisation work has been done on Audio/Video (A/V) codec MIB files. The EBU ECN-IPM Group has therefore proposed a new standard, based upon the IEC 62379 series to address this issue.

Two EBU technical publications have been produced by the ECN-IPM Group.

The parameters and new MIB information may be found in EBU-Tech 3345, End-to-End IP Network Measurement for Broadcast Applications – Parameters & Management Information Base (MIB), Geneva, July 2011.

A description of the software mechanism, EisStream<sup>2</sup>, may be found in EBU-Tech 3346, End-to-End IP Network Measurement for Broadcast Applications – EisStream Software package description, Geneva, July 2011. The software is written in Java and it provides physical path tracing for IP traffic using SNMP.

This part of IEC 62379 and other related parts of IEC 62379, constitute the standards upon which Section 3 of EBU-Tech 3345 is based.

If there is any inconsistency between this standard and Section 3 of EBU-Tech 3345, then IEC 62379-7 and other related parts of IEC 62379, take precedence.

---

<sup>2</sup> EBU Integrated Monitoring Solution for Media Streams on IP Networks, <http://eisstream.sourceforge.net/>

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

### Part 7: Measurements

#### 1 Scope

This part of IEC 62379 specifies aspects of the common control interface of IEC 62379-1 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.

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

IEC 62379-2:2008, *Common control interface for networked digital audio and video products – Part 2: Audio*

IEC 62379-3, *Common control interface for networked audio and video products – Part 3: Video*