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Australian/New Zealand Standard™

Information technology—Generic coding of moving pictures and associated audio information

Part 2: Video

Standards Australia
STANDARDS NEW ZEALAND
Paerewa Aotearoa

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The following are represented on Committee IT-001:

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT-001, Information Systems—Interconnections. This Standard is identical with and has been reproduced from ISO/IEC 13818-2:2000, *Information technology—Generic coding of moving pictures and associated audio information,* Part 2: *Video*, Amendment 1:2001 and Technical Corrigendum 1:2002 which are bound at the back of this Standard.

The objective of this Standard is to specify the coded representation of picture information for digital storage media and digital video communication and also to specify the decoding process.

This Standard is Part 2 of AS/NZS 13818, *Information technology—Generic coding of moving pictures and associated audio information*, which is published in parts as follows:

Part 1: Systems
Part 2: Video (this Standard)
Part 3: Audio
Part 4: Conformance testing
Part 5: Software simulation
Part 6: Extensions for DSM-CC
Part 7: Advanced audio coding
Part 9: Extension for real time interface for systems decoders
Part 10: Conformance extensions for digital storage media command and control

The term 'normative' has been used in this Standard to define the application of the annex to which it applies. A 'normative' annex is an integral part of a Standard.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text 'this International Standard' should read 'this Australian/New Zealand Standard'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to equivalent Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*	
ISO/IEC			
11172	Information technology—Coding of moving pictures and associated audio for digital storage media at up to about 1.5 Mbit/s	4230	Information technology—Coding of moving pictures and associated audio for digital storage media at up to about 1.5 Mbit/s
11172-1	Part 1: Systems	4230.1	Part 1: Systems
11172-2	Part 2: Video	4230.2	Part 2: Video
11172-3	Part 3: Audio	4230.3	Part 3: Audio
10918	Information technology—Digital compression and coding of continuous-tone still images:	4473	Information technology—Digital compression and coding of continuous-tone still images
10918-1	Part 1: Requirements and guidelines	4473.1	Part 1: Requirements and guidelines

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INTRODUCTION

Intro. 1 Purpose

This Part of this Recommendation | International Standard was developed in response to the growing need for a generic coding method of moving pictures and of associated sound for various applications such as digital storage media, television broadcasting and communication. The use of this Specification means that motion video can be manipulated as a form of computer data and can be stored on various storage media, transmitted and received over existing and future networks and distributed on existing and future broadcasting channels.

Intro. 2 Application

The applications of this Specification cover, but are not limited to, such areas as listed below:

BSS	Broadcasting Satellite Service (to the home)
CATV	Cable TV Distribution on optical networks, copper, etc.
CDAD	Cable Digital Audio Distribution
DSB	Digital Sound Broadcasting (terrestrial and satellite broadcasting)
DTTB	Digital Terrestrial Television Broadcasting
EC	Electronic Cinema
ENG	Electronic News Gathering (including SNG, Satellite News Gathering)
FSS	Fixed Satellite Service (e.g. to head ends)
HTT	Home Television Theatre
IPC	Interpersonal Communications (videoconferencing, videophone, etc.)
ISM	Interactive Storage Media (optical disks, etc.)
MMM	Multimedia Mailing
NCA	News and Current Affairs
NDB	Networked Database Services (via ATM, etc.)
RVS	Remote Video Surveillance
SSM	Serial Storage Media (digital VTR, etc.)

Intro. 3 Profiles and levels

This Specification is intended to be generic in the sense that it serves a wide range of applications, bitrates, resolutions, qualities and services. Applications should cover, among other things, digital storage media, television broadcasting and communications. In the course of creating this Specification, various requirements from typical applications have been considered, necessary algorithmic elements have been developed, and they have been integrated into a single syntax. Hence, this Specification will facilitate the bitstream interchange among different applications.

Considering the practicality of implementing the full syntax of this Specification, however, a limited number of subsets of the syntax are also stipulated by means of "profile" and "level". These and other related terms are formally defined in clause 3.

A "profile" is a defined subset of the entire bitstream syntax that is defined by this Specification. Within the bounds imposed by the syntax of a given profile it is still possible to require a very large variation in the performance of encoders and decoders depending upon the values taken by parameters in the bitstream. For instance, it is possible to specify frame sizes as large as (approximately) 2^{14} samples wide by 2^{14} lines high. It is currently neither practical nor economic to implement a decoder capable of dealing with all possible frame sizes.

In order to deal with this problem, "levels" are defined within each profile. A level is a defined set of constraints imposed on parameters in the bitstream. These constraints may be simple limits on numbers. Alternatively they may take the form of constraints on arithmetic combinations of the parameters (e.g. frame width multiplied by frame height multiplied by frame rate).

Bitstreams complying with this Specification use a common syntax. In order to achieve a subset of the complete syntax, flags and parameters are included in the bitstream that signal the presence or otherwise of syntactic elements that occur later in the bitstream. In order to specify constraints on the syntax (and hence define a profile), it is thus only necessary to constrain the values of these flags and parameters that specify the presence of later syntactic elements.