

INTERNATIONAL STANDARD

Baseline specifications of satellite and terrestrial receivers for ISDB (Integrated Services Digital Broadcasting)

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IEC 62360:2008

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IEC 62360

Edition 2.0 2008-09

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STANDARD PREVIEW
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IEC 62360:2008
<https://standards.iteh.ai/catalog/standards/sist/3c032131-332f-4d93-8a4a-c3b6937cd696/iec-62360-2008>

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE **XC**

ICS 33.160.25

ISBN 2-8318-9985-0

CONTENTS

FOREWORD.....	6
INTRODUCTION.....	8
1 Scope.....	9
2 Normative references.....	9
3 Abbreviations and symbols.....	10
4 Configuration of the receiver.....	11
4.1 General.....	11
4.2 Satellite receiver.....	12
4.3 Terrestrial receiver.....	12
5 Ratings and specifications of the units of the digital satellite broadcasting receiver.....	13
5.1 General.....	13
5.2 Satellite receiving antenna.....	13
5.3 Converter.....	13
5.4 Coupling cable.....	14
5.5 Specifications of DIRD.....	14
5.5.1 General.....	14
5.5.2 IF input.....	14
5.5.3 Intermediate frequency.....	14
5.5.4 Bandwidth of the intermediate frequency.....	14
5.5.5 Second local oscillator frequency.....	14
5.5.6 Front-end signal processing.....	14
5.5.7 Transport stream processing.....	15
5.5.8 Memories.....	15
5.5.9 Video decoding and its output.....	16
5.5.10 Audio decoding and its output.....	16
5.5.11 External interfaces.....	16
5.5.12 Remote controller and channel access.....	16
6 Ratings and specifications of the receiving units for the digital terrestrial television broadcasting.....	17
6.1 Receiving antenna.....	17
6.2 Specifications of the DIRD.....	17
6.2.1 General.....	17
6.2.2 Input.....	17
6.2.3 First intermediate frequency.....	18
6.2.4 Synchronization range of the received frequency.....	18
6.2.5 Synchronization range of the received clock.....	18
6.2.6 Characteristics of the tuning unit.....	18
6.2.7 Front-end signal processing.....	19
6.2.8 Transport stream processing.....	22
6.2.9 Memories.....	22
6.2.10 Video decoding and its output.....	22
6.2.11 Audio decoding and its output.....	22
6.2.12 External interfaces.....	22
6.2.13 Remote controller and channel access.....	23
6.3 Analogue broadcast receiving function.....	23
7 Decoding process of video and audio, and those output signals.....	23

7.1	Video decoding process and output signals	23
7.1.1	Video decoding process	23
7.1.2	Video output signals	27
7.1.3	Video-signal output.....	35
7.1.4	Copy protection	37
7.2	Audio decoding process and output signals	38
7.2.1	General	38
7.2.2	Audio decoding process	38
7.2.3	Audio mode detection and indication	40
7.2.4	Audio-signal output.....	40
7.3	Receiver's function of hierarchical modulation in digital satellite broadcasting	41
7.3.1	Identification of hierarchical modulation	41
7.3.2	Reception processing of hierarchical modulation	41
7.3.3	Display of low-hierarchy video in hierarchical modulation	41
7.4	MP@LL moving picture and still picture of terrestrial digital television broadcast	42
7.4.1	Display on receiving equipment	42
8	Downloading function	50
8.1	General	50
8.2	Terms and definitions, service variation	50
8.2.1	Terms and definitions	50
8.2.2	Service variation.....	50
8.3	Transmission scheme relevant to downloading.....	51
8.3.1	General	51
8.3.2	Transmission scheme of notification information.....	51
8.3.3	Transmission scheme of the content.....	57
8.4	Preferable specifications of the receiver	64
8.4.1	General	64
8.4.2	Necessary functions	64
8.4.3	Necessary capacity and performance of receiver hardware	66
9	Signal processing functions of DIRD.....	66
9.1	Service information	66
9.2	Identification between broadcasting and non-broadcasting	66
9.3	Number of PIDs to be simultaneously processed	66
9.4	Flow of program selection	66
	Annex A (informative) Method of switching the video format	69
	Annex B (informative) Down-mix processing in the AAC decoder	76
	Bibliography.....	78
	Figure 1 – Basic configuration of the receiver	11
	Figure 2 – Basic configuration of DIRD	12
	Figure 3 – Directional pattern of the antenna (excerpt from ITU-R recommendation BT.419-3)	17
	Figure 4 – Receiver block diagram of the 13-segment receiver	19
	Figure 5 – Receiver block diagram of the one-segment receiver	21
	Figure 6 – Desirable representation formats on monitors with a 4:3 aspect ratio and a 16:9 aspect ratio.....	34
	Figure 7 – Reference drawing.....	49

Figure 8 – Identification flow of broadcasting/non-broadcasting	67
Figure 9 – Basic flow of program selection.....	68
Figure A.1 – Conceptual diagram of the timing of the transmitting and receiving sides that enables SDTV/HDTV completely seamless switching (processing in cases in which sequence_end_code_flag of video_decode_control_descriptor is 1)	73
Figure A.2 – Conceptual diagram of the timing of the transmitting and receiving sides in the simplified method of switching SDTV/HDTV (processing in the cases in which sequence_end_code_flag of video_decode_control_descriptor is 0)	75
Table 1 – Satellite receiving antenna rating	13
Table 2 – Converter rating	13
Table 3 – Coupling cable rating	14
Table 4 – Size of logo data	15
Table 5 – Ratings of the receiving antenna	17
Table 6 – Protection ratios of the 13-segment receiver	18
Table 7 – Size of logo data	22
Table 8 – Meaning of the code index of the MPEG-2 coding parameters in Tables 10 and 11	24
Table 9 – Positions of active lines.....	24
Table 10 – Constraints of coding parameters 1 (case in which the display screen area is not specified by sequence_display_extension).....	25
Table 11 – Constraints of coding parameters 2 (case in which the display-screen area is specified by sequence_display_extension).....	26
Table 12 – Relationship between the parameter values of sequence_display_extension of a stream and video-signal output 1.....	28
Table 13 – Relationship between the parameter values of sequence_display_extension of a stream and the video signal output 2.....	30
Table 14 – Relationship between the parameter values of sequence_display_extension of a stream and video signal output 3	32
Table 15 – 1080i component output	35
Table 16 – 720p component output.....	35
Table 17 – 480p component output.....	36
Table 18 – 480i component output.....	36
Table 19 – NTSC composite output.....	36
Table 20 – NTSC Y/C output.....	36
Table 21 – Colorimetric parameters	37
Table 22 – Formula of down mixing audio signal to 2-channel stereo	39
Table 23 – Formula of down mixing audio signal for external pseudo-surround processor	40
Table 24 – Relationship between the parameter values of sequence_display_extension of reduced resolution moving pictures and video output signals (1).....	43
Table 25 – Relationship between the parameter values of sequence_display_extension for reduced resolution moving pictures and video output signals (2).....	44
Table 26 – Relationship between the parameter values of sequence_display_extension for reduced resolution moving pictures and video output signals (3).....	45
Table 27 – Relationship between the parameter values of sequence_display_extension for still pictures and video output signals (1).....	46
Table 28 – Relationship between the parameter values of sequence_display_extension for still pictures and video output signals (2)	47

Table 29 – Relationship between the parameter values of sequence_display_extension for still pictures and video output signals (3)	48
Table 30 – Data structure of software download trigger table	52
Table 31 – Version indicator	54
Table 32 – Schedule time-shift information	54
Table 33 – Structure of download content descriptor	55
Table 34 – compatibilityDescriptor format	58
Table 35 – Identification field	59
Table 36 – DII (Download Info Indication Message) format	59
Table 37 – CDT syntax	61
Table 38 – Logo transmission descriptor syntax	63
Table 39 – Logo transmission type	63
Table A.1 – Video-decoding control descriptor	70
Table A.2 – Video encode format	70

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**BASELINE SPECIFICATIONS OF SATELLITE
AND TERRESTRIAL RECEIVERS FOR ISDB
(INTEGRATED SERVICES DIGITAL BROADCASTING)**

FOREWORD

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International Standard IEC 62360 has been prepared by technical area 1: Terminals for audio, video and data services and content, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

This second edition cancels and replaces the first edition, published in 2004 and constitutes a technical revision.

The main changes with respect to the previous edition are listed below.

- The non-volatile memory size for terrestrial, BS and CS receiver has been specified.
- Desirable reception channel range of the receiver for VHF and MID band has been specified.
- DVI interface and HDMI interface have been specified as digital interface.
- Down mixing formula from multi-channel to 2-channel stereo has been changed.

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

CDV	Report on voting
100/1323/CDV	100/1423/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.

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.

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INTRODUCTION

This International Standard is based on, and is the subset of ARIB¹ STD-B21 Version 4.5 which is established with regard to digital broadcasting receivers. It contains baseline specifications of receivers for satellite and terrestrial ISDB systems. It does not contain EPG (Electronic Program Guide), CA (Conditional Access), bi-directional communication function, data decoder function and high speed digital interface connector specification which were covered by the ARIB STD-B21.

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¹ The Association of Radio Industries and Businesses establishes ARIB standards for the basic technical requirements such as various radio-equipment specifications for various radio signal utilization systems, with the participation of broadcasting-equipment manufacturers, broadcasting service providers, radio-equipment manufacturers, telecommunication companies, and their users.

ARIB standards are private standards established by compiling private and voluntary standards that have been developed to increase convenience for broadcasting-equipment manufacturers, broadcasting service providers, radio-equipment manufacturers, telecommunication companies, and their users, such as by ensuring the appropriate quality of and compatibility between broadcasting and radio facilities. These standards are intended to be used in conjunction with national technical standards established to ensure the efficient use of available frequencies and to avoid radio interference between users.

In order to ensure fairness and transparency in the establishment process, the standard was determined by consensus of all participants in our standard meeting, selected without bias from a broad range of interested parties – foreign and domestic, firms and individuals – including broadcasting-equipment manufacturers, broadcasting service providers, radio equipment manufacturers, common carriers, and their users.

BASELINE SPECIFICATIONS OF SATELLITE AND TERRESTRIAL RECEIVERS FOR ISDB (INTEGRATED SERVICES DIGITAL BROADCASTING)

1 Scope

This International Standard specifies the basic functions, ratings, and performance of receivers for the Integrated Services Digital Broadcasting (ISDB) system. It applies to: receivers for standard digital television broadcasting, high-definition television broadcasting, and radio broadcasting from satellite broadcasting stations in the frequency band of 11,7 GHz to 12,2 GHz (hereinafter referred to as “BS digital broadcasting”); receivers for standard digital television broadcasting with a bandwidth of 34,5 MHz from satellite broadcasting stations in the frequency band of 12,2 GHz to 12,75 GHz (hereinafter referred to as “broadband CS digital broadcasting”); and receivers for the standard digital television broadcasting and high-definition television broadcasting from terrestrial broadcasting stations (hereinafter referred to as “digital terrestrial television broadcasting”).

With regard to the receiver, it may be designed for receiving only one broadcast service from the above-mentioned digital broadcasting or for receiving multiple broadcast services. Various types of receivers for receiving digital terrestrial television broadcasts may be designed, that is, receivers intended for fixed, for mobile and for portable reception.

This standard defines the BS digital-broadcasting receiver, the dual-purpose receiver for BS digital broadcasting and broadband CS digital-broadcasting (hereinafter referred to as a “BS and broadband CS digital broadcasting dual-purpose receiver”), as well as the receiver for digital terrestrial television broadcasting using an outdoor fixed receiving antenna and with a large display. For a small-sized simple receiver, a vehicle-mounted receiver, a portable receiver, and the like, this standard should be applied as far as practical.

In this standard, the BS digital-broadcasting receiver and the BS and broadband CS digital-broadcasting dual-purpose receiver are generically described as digital satellite broadcasting receivers.

In addition, when it is necessary to distinguish between the BS digital-broadcasting receiver and the BS and broadband CS digital-broadcasting dual-purpose receiver, [BS] is additionally used to specify a BS digital-broadcasting receiver, and [BS • CS] is used likewise to specify a BS and broadband CS digital-broadcasting dual-purpose receiver.

2 Normative references

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.

ISO/IEC 13818-1, *Information technology – Generic coding of moving pictures and associated audio information: Systems*

ISO/IEC 13818-2, *Information technology – Generic coding of moving pictures and associated audio information: Video*

ISO/IEC 13818-7, *Information technology – Generic coding of moving pictures and associated audio information – Part 7: Advanced Audio Coding (AAC)*

ITU-R BT.419-3, *Directivity and polarization discrimination of antennas in the reception of television broadcasting*

ITU-R BT.709, *Parameter values for the HDTV standards for production and international programme exchange*

ITU-R BT.1361, *Worldwide unified colorimetry and related characteristics of future television and imaging systems*

IETF Standard: RFC2046, *Multipurpose Internet Mail Extension (MIME) Part Two: Types*

3 Abbreviations and symbols

AAC	Advanced Audio Coding
ADTS	Audio Data Transport Stream
ARIB	Association of Radio Industries and Businesses
BS	Broadcast Satellite
bslbf	bit string, left bit first
CRC	Cyclic Redundancy Check
CS	Communication Satellite
DDB	Download Data Block Message
DDWG	Digital Display Working Group
DEMUX	de-Multiplex
DII	Download Info Indication Message
DIRD	Digital Integrated Receiver Decoder
DQPSK	Differential Quadrature Phase Shift Keying
DSM-CC	Digital Storage Media Command and Control
DTS	Display Time-Stamp
DVI	Digital Visual Interface
ECM	Entitlement Control Message
EPG	Electronic Program Guide
HDMI	High-Definition Multimedia Interface
HDTV	High Definition Television
IEC	International Electrotechnical Commission
IF	Intermediate Frequency
IRD	Integrated Receiver Decoder
ISDB	Integrated Services Digital Broadcasting
ISO	International Organization for Standardization
LC	Low Complexity
LFE	Low Frequency Enhancement
MJD	Modified Julian Date
MPEG	Moving Picture Experts Group
MSB	Most Significant Bit
OFDM	Orthogonal Frequency Division Multiplex
PCR	Program Clock Reference
PES	Packetized Elementary Stream

PID	Packet Identifier
PMT	Program Map Table
PSI	Program System Information
PTS	Presentation Time-Stamp
QAM	Quadrature Amplitude Modulation
QPSK	Quadrature Phase Shift Keying
RS	Reed-Solomon
SDTT	Software Download Trigger Table
SDTV	Standard Definition Television
SHB	Super Hi-Band
SP	Scattered Pilot
TMCC	Transmission and Multiplexing Configuration Control
uimbsf	unsigned integer most significant bit first
16QAM	16-level Quadrature Amplitude Modulation
64QAM	64-level Quadrature Amplitude Modulation

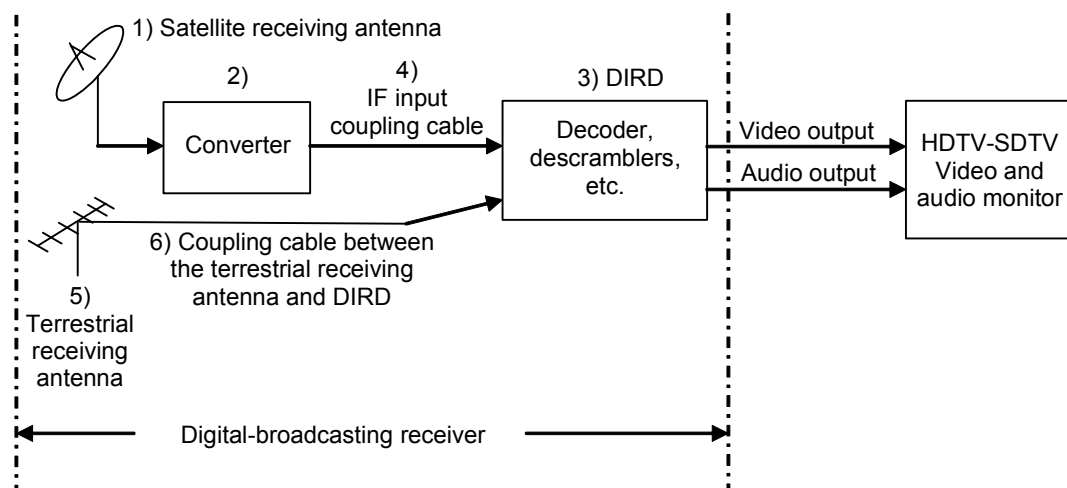
4 Configuration of the receiver

4.1 General

The basic configuration of the “receiver” specified here is shown in Figure 1.

The basic configuration of the DIRD is shown in Figure 2.

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Figure 1 – Basic configuration of the receiver

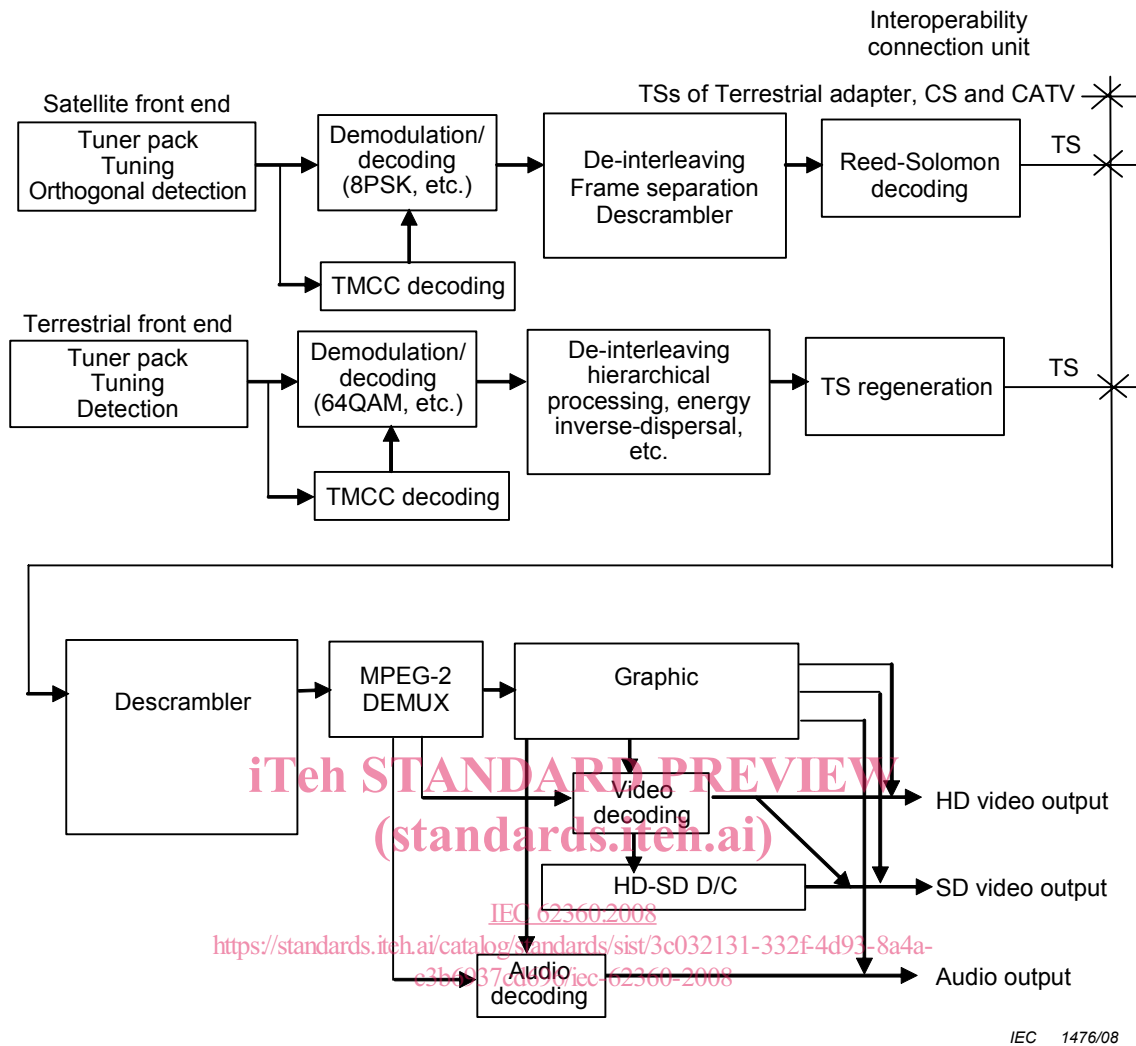


Figure 2 – Basic configuration of DIRD

4.2 Satellite receiver

The satellite receiver is composed of the following units:

- satellite receiving antenna;
- converter;
- DIRD;
- coupling cable between the converter and the DIRD.

However, the satellite receiving antenna (including a feed horn) may be integrated with the converter.

4.3 Terrestrial receiver

The terrestrial receiver is composed of the following units:

- terrestrial receiving antenna;
- DIRD;
- coupling cable between the terrestrial receiving antenna and the DIRD.

5 Ratings and specifications of the units of the digital satellite broadcasting receiver

5.1 General

In the descriptions in this clause, [BS] indicates the ratings and specifications only for BS digital broadcast receivers, and [BS • CS] indicates those of the BS and broadband CS digital broadcast dual-purpose receivers.

5.2 Satellite receiving antenna

Table 1 – Satellite receiving antenna rating

Item	Rating
Received frequency range	[BS] 11,710 23 GHz to 12,166 69 GHz [BS • CS] 11,710 23 GHz to 12,748 25 GHz
Receiving polarization	[BS] Right-hand circular [BS • CS] Right-hand/left-hand circular
Antenna diameter	The desired antenna diameter is not specified, as the necessary antenna diameter varies depending on the receiving conditions
Output structure	The output structure shall be composed of a WRJ-120-type wave-guide and a BRJ-120 flange, and shall be provided with waterproof packing. Not applicable to the all-in-one type with a converter

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5.3 Converter

Table 2 – Converter rating

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Item	Rating
Input structure	The input structure shall be composed of a WRJ-120-type wave-guide and a BRJ-120 flange, and shall be provided with waterproof packing. Not applicable to the all-in-one type with a converter
Range of input-signal level	For one channel: BS band: –90 dB(mW) to –70 dB(mW) CS band: –94 dB(mW) to –70 dB(mW)
Overall gain	BS band: 52 dB ± 4 dB CS band: 52 dB ± 6 dB
Intermediate frequency	BS band: 1 032,23 MHz to 1 488,69 MHz CS band: 1 575,75 MHz to 2 070,25 MHz
First local frequency	10,678 GHz
Output impedance	75 Ω
Output structure	Waterproof receptacle equivalent to a high-frequency coaxial C15-type connector
Power supply	[BS] DC +15 V +10 % –12 %, 4 W or less [BS • CS] Right-hand circular, DC 13,5 V to 16,5 V (15 V), 4 W or less Left-hand circular, DC 9,5 V to 12,0 V (11 V), 3 W or less