IEC 62889

Edition 1.0 2015-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Digital video interface – Gigabit video interface for multimedia systems

Interface vidéo numérique – Interface vidéo gigabit pour les systèmes multimédias

IEC 62889:2015-04(en-fr)

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

A propos de l'IEC
La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC
Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC - webstore.iec.ch/advsearchform
La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, …). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished
Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc
Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org
Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 300 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 19 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

IEC 62889

Edition 1.0 2015-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Digital video interface – Gigabit video interface for multimedia systems

Interface vidéo numérique – Interface vidéo gigabit pour les systèmes multimédias

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 33.160.40; 33.160.60; 35.200

ISBN 978-2-8322-5432-5

CONTENTS

FOREWORD 4
INTRODUCTION 6
1 Scope 7
2 Normative references 7
3 Terms, definitions and abbreviations 7
3.1 Terms and definitions 7
3.2 Abbreviations 9
4 Architecture 10
5 Electrical characteristics 11
5.1 DC electrical specifications 11
5.2 AC electrical specifications 12
6 Front-end 13
6.1 General 13
6.2 TX front-end 13
6.3 RX front-end 13
7 Transition state link 14
8 Protocol 15
8.1 General 15
8.2 Encoder 15
8.3 Decoder 17
9 Transmission system and transmission line of electrical characteristics 17
Annex A (informative) Multiple link application 19
A.1 Single link application example 19
A.1.1 Block diagram for single link transmission 19
A.1.2 Data mapping of single link transmission 20
A.2 Multiple link application example 20
A.2.1 Block diagram for 2-pair parallel transmission 20
A.2.2 Data mapping of 2-pair transmission 21
Bibliography 22

Figure 1 – Architecture of the GVIF 10
Figure 2 – VOD, VOS diagram 11
Figure 3 – Transmitter eye mask specifications (TP1) 12
Figure 4 – Front-end block diagram 13
Figure 5 – Transition state link 14
Figure 6 – Encoder output diagram 15
Figure 7 – C format word 16
Figure 8 – H format word 16
Figure 9 – Transmission system 17
Figure 10 – Transmission line tolerance impedance 18
Figure 11 – Transmission loss 18
Figure A.1 – Differential single link block diagram 19
Figure A.2 – Pixel configuration 20

Figure A.3 – Multiple link application block diagram 20
Figure A.4 – Pixel configuration when using 2-pairs 21

Table 1 – DC electrical specifications of the transmitter 11
Table 2 – DC electrical specifications of the receiver 12
Table 3 – AC electrical specifications of the transmitter 12
Table 4 – AC electrical specifications of the receiver 12
Table 5 – 4B5B conversion 16
Table 6 – VSYNC, HSYNC, DE, CNTL/AUX, SDA, TDA transition and the corresponding header 17

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

DIGITAL VIDEO INTERFACE – GIGABIT VIDEO INTERFACE FOR MULTIMEDIA SYSTEMS

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 62889 has been prepared by subcommittee 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
100/2193/CDV	100/2298/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 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.

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

This International Standard is based on a standard JEITA CP-6101: Digital monitor interface GVIF that was originally specified by the Japan Electronics and Information Technology Industries Association (JEITA).

The gigabit video interface (GVIF) is a serial point to point interface supporting uncompressed digital video links that was designed to address the needs of automotive navigation and entertainment systems, etc., to transport base band digital video information. The GVIF applies low voltage differential signaling (LVDS) technology and makes use of a thin cable consisting of a single shielded twisted pair of conductors that exhibits high noise immunity and low EMI, and is optimized for small size and low weight. The GVIF supports display resolutions ranging from WQVGA through WUXGA with maximum 24 bit per pixel colour video data, and can transmit base band video signal over cable lengths over 10 m. When paired with high bandwidth data content protection (HDCP), the GVIF's standard functions and features address all of the requirements for delivering content protected video from a source to a video display monitor. Optionally, the GVIF supports audio data transmission and user data transmission.

The Association of Radio Industry Business (ARIB) refers the GVIF in its standard ARIB STD-B21 as one of authorized digital video output interfaces.