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AES Recommended practice for sound-reinforcement systems — Communications interface (PA-422)

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Abstract
This Audio Engineering Society (AES) Standard specifies the electrical characteristics of a balanced-voltage circuit for the interchange of serial binary signals for the control of sound-reinforcement systems. It provides for interchange among data terminal equipment (DTE), that is, computers and microprocessors, and data circuit-terminating equipment (DCE). PA-422 is a mnemonic, signifying professional audio implementation of Electronics Industries Association EIA-422-A. Device control language is provided in an annex.

Contents

[This foreword is not a part of AES Recommended practice for sound-reinforcement systems — Communications interface (PA-422), AES15-1991.]

Foreword

This standard has been prepared by the Working Group on Sound System Control, a working group of the Audio Engineering Society Standards Committee. It is designed in the public interest to eliminate misunderstandings between manufacturers, consultants, purchasers, and users, and to facilitate interchangeability, integration, and improvement of products, thus allowing the selection and utilization of the proper product for a particular need.

The standard may involve patents on articles, materials, or processes. The AES assumes no liability to any patent owner, nor does it assume any obligation whatever to parties adopting the standard.

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TOM ROSEBERRY, *Chairman*
AES Standards Committee Working Group on Sound System Control
1990 May

At the time of approval of this document for publication, the AES Standards Committee had the following membership: Yoshi-Haru Abe, James S. Brawley, Richard C. Cabot, Peter D'Antonio, Donald Eger (Chair), Robert A. Finger, Irving Joel, William Hogan, Tomlinson F. Holman, Mike Klasco, David L. Klepper, Bart N. Locanthi, J.P. Nunn, Daniel Queen (Secretary), Tom Roseberry, W.T. Shelton, William D. Storm, Ted Telesky, Han Tendeloo, and Floyd E. Toole.

The American National Standards Institute version of this standard has not been reprinted and remains available as ANSI S4.49-1991.

AES Recommended practice for sound-reinforcement systems — Communications interface (PA-422)

1 Scope

This standard specifies the electrical characteristics of the balanced-voltage circuit that may be used when specified for the interchange of serial binary signals among data terminal equipment (DTE), that is, computers and microprocessors, and data circuit-terminating equipment (DCE) of, or in, any point-to-point interconnection of serial binary signals among digitally controlled equipment. The standard contains a device control language (DCL) for controlling communication among the various products. Annex A covers this device control language. The interface includes a driver and an interconnecting cable to a receiver. The electrical characteristics of the circuitry are similar to and expected to perform in the same manner as those of the Electronics Industries Association standard EIA-422-A, hence the mnemonic, PA-422 for professional audio use.

Minimum performance requirements for the interconnecting cable are furnished. Guidance is given with respect to limitations on the data rate imposed by the parameters of cable length, balance, and termination for individual installations.

2 Applicability

The provisions of this standard may be applied to the interfaces used among equipment where the information being conveyed is in the form of serial binary signals at the dc baseband level. This standard shall be referenced by the specifications and specific interface standards applying these electrical characteristics. Typical points of applicability for this standard are depicted in figure 1.

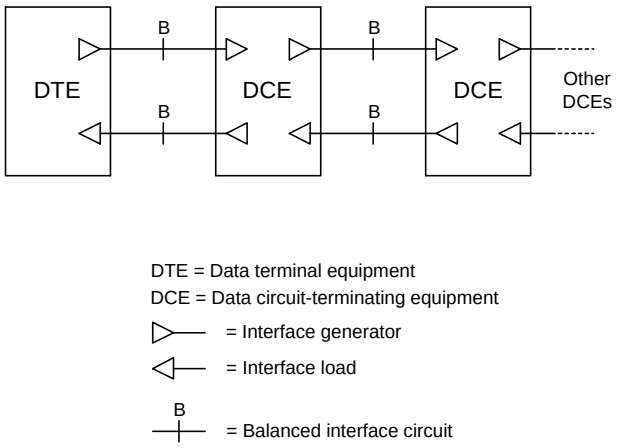

Figure 1 – Applications of communications interface

The balanced-voltage digital interface should be utilized on data, timing, or control circuits in appropriate applications. This is to ensure the elimination of any outside electrical interference which might disrupt the operation. The data rate of the signals can range up to over 10^6 bits per second. The maximum rate for an individual application is dependent on the cable type and length. While a restriction on maximum cable length is not established, guidelines are given with respect to conservative operating distances as a function of the data signaling rate (see Section 5).

In general, these conservative values may be exceeded where the installation is engineered to ensure that noise and ground potential values are held to a minimum.