AES standard for audio connectors - Modified XLR-3 Connector for Digital Audio

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Abstract
This standard covers new connector types in order to identify AES3 equipment, signals and transmission circuits (tie lines). By extension, the same connectors will also identify AES42 microphone connections. The new "digital" connectors are based on the conventional analogue three pole XLR-type connectors with the difference of additional keying. The keying is realized in a manner as to prevent mating with conventional XLR-type connectors. Furthermore new "compatible" connectors that mate with both "digital" and conventional types are being specified.

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Foreword

This foreword is not part of AES62-2011, *AES standard for audio connectors - Modified XLR-3 Connector for Digital Audio*.

AES3, *AES standard for digital audio engineering - Serial transmission format for two channel linearly represented digital audio data* standardizes the serial digital transmission of two channels of digital audio over balanced, twisted-pair cable. The need for a unique connector type to identify AES3 equipment, signals and transmission circuits (tie lines) was considered by the SC-04-04 working group on Microphones when considering AES42, *AES Standards for Acoustics - Digital interface for microphones*, and by the SC-02-02 Working Group on Digital Audio Interfaces - responsible for the maintenance of AES3.

Following a questionnaire and a resulting report, conducted and prepared by SC-02-02 under project AES-X119, a suitable connector strategy was developed in the SC-05-02 working group on Audio Connectors under project AES-X105. As a result of this work, this document proposes new connector types for AES3 digital audio signals over balanced, twisted-pair cable.

Ray Rayburn
Chair, SC-05-02 working group on audio connectors
2011-05-04

Note on normative language

In AES standards documents, sentences containing the word “shall” are requirements for compliance with the document. Sentences containing the verb “should” are strong suggestions (recommendations). Sentences giving permission use the verb “may”. Sentences expressing a possibility use the verb “can”.

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Introduction

This document proposes new connector types for AES3 digital audio signals over balanced, twisted-pair cable in applications that include AES42 digitally-interfaced microphones. The new "digital" connectors are mechanically compliant with equipment designs using XLR-type connectors, and are based on the existing three pole XLR-type connectors with the difference of additional keying. The keying is realized in a manner that will prevent mating with existing standard XLR-type connectors. All new digital equipment should eventually migrate to these connectors, although existing products could continue to use existing connectors. Furthermore new "compatible" connectors should enable mating with both "digital" and existing types where the application or specific circumstances requires this.

What should this standard accomplish?

The major function of the new digital connector family is to identify equipment that produces an AES3 signal, tie lines and patch cables that will reliably carry the AES3 signal, and equipment that can receive the AES3 signal.

These primary objectives should be satisfied by the standard:

- Prevent a digital source from feeding tie lines that are not suitable for AES3 signals.
- Prevent a digital source from feeding equipment that cannot receive it.
- Prevent a digital receiver (input), for example, one designed to provide phantom power for a digital microphone, from damaging an analogue source accidentally connected to it.
- Allow a compatible receiver to accept both digital and analogue sources.
- Allow a source that can produce both analogue and digital signals to feed analogue, digital, and compatible receivers.

These secondary objectives are desirable but may not be achievable:

- Minimize the number of tie lines and portable cables (i.e. analogue cables and digital cables).
- Install digital tie lines and use them for both digital and analogue signals.
- Use digital-rated cable for all portable cable and use the same cables for both digital and analogue signals.

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0 Preamble

0.1 Documentation conventions

Following ISO convention, decimal points are conventionally shown as commas (,). All dimensional values are indicated in mm.

1 Scope

This standard specifies variants of the XLR connector family to be used for professional audio applications that include AES3 digital audio interfaces.

These variants are based upon the existing 3-pole XLR-type connector. Additional mechanical properties and dimensions relating to keying characteristics are specified in order to allow proper mating of connectors that are intended to be intermateable and prevent mating of connectors that are not intended to be intermateable.

Test methods to confirm the correct function of the keying are indicated. Additional means supporting identification of different connector types are under consideration.

The document does not include any electrical requirements.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this document. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this document are encouraged to investigate the possibility of applying the most recent editions of the indicated standard.

IEC 61076-2-103 (2004) *Connectors for electronic equipment – Part 2-103: Circular connectors – Detail specification for a range of multipole connectors (type 'XLR')*, International Electrotechnical Commission, Geneva, Switzerland.

IEC 60512-13-5 (2006) *Connectors for electronic equipment – Tests and measurements – Part 13-5: Mechanical operation tests – Test 13e: Polarizing and keying method*, International Electrotechnical Commission, Geneva, Switzerland.

AES42-2010 *AES standard for acoustics – Digital interface for microphones*. Audio Engineering Society, New York, NY., US.

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