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TECHNICAL REPORT

Information technology – Generic cabling for customer premises – Part 9906: Balanced single-pair cabling channels up to 600 MHz for single-pair Ethernet (SPE)



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

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

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Part 9906: Balanced single-pair cabling channels up to 600 MHz for single-pair Ethernet (SPE)

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ISO/IEC TR 11801-9906 has been prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology. It is a Technical Report.

This second edition cancels and replaces the first edition published in 2020. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) the addition of ISO/IEC/IEEE 8802-3, 100BASE T1L, long reach;
b) complete rearrangement of the information contained in Clause 4, Clause 5, Annex A, Annex B, and Annex C.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
JTC1-SC25/3279/DTR	JTC1-SC25/3293/RVDTR

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

The list of all currently available parts of the ISO/IEC 11801 series, under the general title *Information technology – Generic cabling for customer premises*, can be found on the IEC and ISO websites.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1, and the ISO/IEC Directives, JTC 1 Supplement available at www.iec.ch/members_experts/refdocs and www.iso.org/directives.

INTRODUCTION

This document is a compendium of balanced single-pair cabling channel specifications, which support application-specific use in the link-segments specified in ISO/IEC/IEEE 8802-3 single-pair Ethernet (SPE) physical interface (PHY) standards.

The balanced single-pair cabling channels support SPE PHYs as specified in ISO/IEC/IEEE 8802-3, including 1000BASE-T1 Type B, 1000BASE-T1 Type A, 100BASE-T1L, 100BASE-T1, 10BASE-T1L, and 10BASE-T1S.

NOTE At the time of publication, 100BASE-T1L is unpublished.

While the original use case for SPE was automotive applications, this document describes balanced single-pair cabling channels intended for use in non-automotive, SPE applications, for example:

1) industrial automation applications, Industrial Internet of Things (IIoT), Industry 4.0;
2) enterprise building applications, Internet of Things (IoT), smart lighting, energy management, and access control;
3) other IoT applications, smart building, and home automation applications.

SPE cabling channels support bidirectional signal transmission, using one balanced pair, for 1 000 Mbit/s up to 40 m, 100 Mbit/s up to 500 m, or 10 Mbit/s up to 1 000 m, where reach is influenced by cabling channel capacity limitations from signal loss.

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INFORMATION TECHNOLOGY – GENERIC CABLING FOR CUSTOMER PREMISES –

Part 9906: Balanced single-pair cabling channels up to 600 MHz for single-pair Ethernet (SPE)

1 Scope

This document covers cabling channel specifications, for cabling channels constructed from balanced single-pair cabling components, intended for use in:

1) industrial automation applications, Industrial Internet of Things (IIoT), Industry 4.0;
2) enterprise building applications, Internet of Things (IoT), smart lighting, energy management, and access control;
3) other IoT applications, smart building, and home automation applications.

The cabling channel specifications are intended to support ISO/IEC/IEEE 8802-3 single-pair Ethernet (SPE) link segment specifications in the following SPE physical layer specifications (PHYs):

a) 1000BASE-T1 Type B, with reach up to 40 m;
b) 1000BASE-T1 Type A, with reach up to 15 m;
c) 100BASE-T1L, with reach up to 500 m;
d) 100BASE-T1, with reach up to 15 m;
e) 10BASE-T1L, with reach up to 1000 m;
f) 10BASE-T1S, with reach up to 15 m.

NOTE At the time of publication, 100BASE-T1L is unpublished.

The channel component specifications are referenced according to corresponding IEC balanced single-pair cable and connector specifications.

Channel specifications include IL, RL, TCL, coupling attenuation, and alien crosstalk parameters specifications.

The channel EMC related specifications are referenced according to the MICE standard environmental characterization systems specified in ISO/IEC 11801-1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 11801-1, *Information technology – Generic cabling for customer premises – Part 1: General requirements*