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TECHNICAL REPORT

colour inside

Information technology – Generic cabling for customer premises – Part 9911: Guidelines for the use of balanced single pair applications within a balanced 4-pair cabling system

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FOREWORD

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ISO/IEC TR 11801-9911 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.

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.

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

DTR	Report on voting
JTC1-SC25/3253/DTR	JTC1-SC25/3282/RVDTR

Full information on the voting for the approval of this Technical Report 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.

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

IMPORTANT – The "colour inside" logo on the cover page of this document 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

The ISO/IEC 11801 series is currently being revised to cover “balanced single pair cabling systems”, which will expand the range of use for structured cabling systems. With the capability of delivering data and power, these systems are ideally suited for incorporating Internet of Things (IoT) devices into premises cabling systems. Single pair applications are increasingly important for all operators of automation networks in buildings and industrial areas. Implementing these new single pair cabling structures provides for application of device-level diagnostics and security and provides for improved system scalability. Single pair cabling is not meant to replace traditional 4-pair cabling, but to support emerging applications, such as interconnecting IoT and M2M (machine-to-machine) devices.

This document gives guidance and instructions for the use of balanced single pair cabling as specified in ISO/IEC 11801-1:2017/AMD1:- [1][1] and 4-pair components specified in ISO/IEC 11801-1:2017 [2] together in the same balanced cabling system assuring application support in accordance with ISO/IEC 11801-6 [3].

[1] Under preparation. Stage at the time of publication: ISO/IEC CD 11801-1:2017/AMD1:2023.

Information technology – Generic cabling for customer premises – Part 9911: Guidelines for the use of balanced single pair applications within a balanced 4-pair cabling system

1 Scope

This part of ISO/IEC 11801, which is a Technical Report,

a) describes the rules of implementation of balanced single pair cabling as specified by ISO/IEC 11801-6 [3] within a balanced 4-pair cabling system with a current carrying capacity of 0,75 A per conductor as specified in ISO/IEC 11801-1:2017 [2];

b) describes the use of ISO/IEC 11801-1:2017 [2] components and cabling to implement and configure in accordance with ISO/IEC 11801-3:2017/AMD1:2021 [4], ISO/IEC 11801-4 [5] and ISO/IEC 11801-6 [3];

c) describes links and components for generic single pair channels in accordance with ISO/IEC 11801-1:2017/AMD1:- [1]. Particular areas of interest are

   1) remote powering in accordance with IEEE Std 802.3dd [6],
   2) loop resistance and maximum current,
   3) insertion loss,
   4) return loss,
   5) noise considerations,
   6) frequency range requirements (low and high),
   7) length calculation of the SCP link 4-pair-cable, and
   8) number of channels;

d) describes the use of application-specific single pair channels in addition to ISO/IEC 11801-1:2017/AMD1:- [1], 6.6.4;

e) describes guidance on single pair remote powering applications when using 4-pair cabling with current carrying capacity specified by ISO/IEC 11801-1:2017 [2];

f) describes guidelines for planning, administration and installation.

NOTE This document compares requirements of existing 4-pair cabling classes and single-pair classes. The described approach can be adjusted to any number of pairs.

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 requiements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 11801-1 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

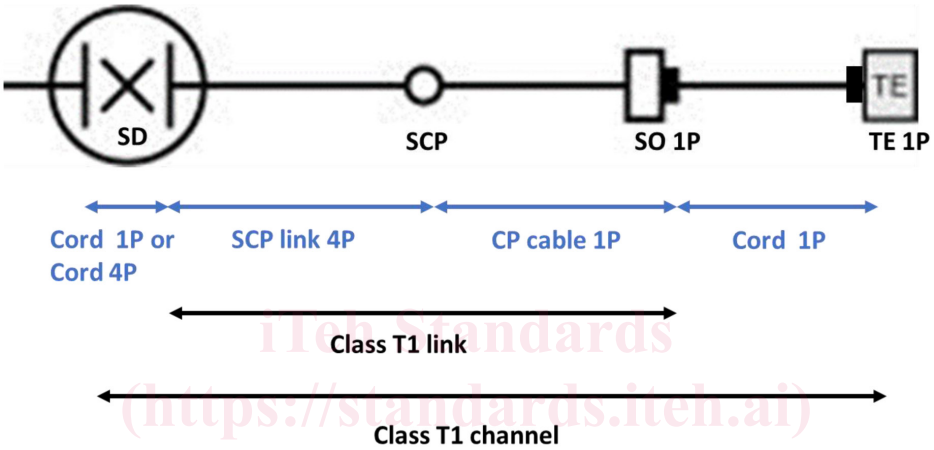
- IEC Electropedia: available at https://www.electropedia.org/

- ISO Online browsing platform: available at https://www.iso.org/obp

4 Simultaneous operation of multiple single pair applications within an engineered system that includes 4-pair cabling components in accordance with ISO/IEC 11801-1:2017 [2]

4.1 General

This document assumes an extension of a 2-connector SCP link 4-pair type B cabling as specified in ISO/IEC 11801-6 [3] with single pair components to create up to four channels that conform to single pair generic channels (see Figure 1).



SD	service distributor
SCP	service concentration point
1P	single pair
4P	4-pair
SO 1P	service outlet, see ISO/IEC 11801-1:2017/AMD1:- [1], 10.14 and 10.15, TE outlet
TE 1P	terminal equipment single pair
Cord 1P (SD + SO)	single pair patchcord at both ends
Cord 4P (SD)	4-pair patchcord at SD end
SCP link 4P	4-pair service concentration point link
CP cable 1P	concentration point cable single pair

Figure 1 – Structure and definition of an extended type B generic channel

4.2 Creation of single pair cabling channels

Based on 4.1 cabling channels can be achieved by:

a) creating up to four single pair channels based on 4-pair cabling that conforms to T1-A, T1-B or T1-C;

b) creating up to four single pair links based on SCP link 4-pair cabling that conforms to T1-A, T1-B or T1-C and adding single pair conformant cords;

c) reference implementation using single pair conformant single pair and 4-pair components (see Clauses 9 and 10 of ISO/IEC 11801-1:2017/AMD1:- [1]).