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TECHNICAL REPORT

Information technology – Generic cabling – Introduction to the MICE environmental classification

ISO/IEC TR 29106:2007-11+AMD1:2012-12+AMD2:2019-07 CSV(en)

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CONTENTS

INFORMATION TECHNOLOGY – GENERIC CABLING – INTRODUCTION TO THE MICE ENVIRONMENTAL CLASSIFICATION

FOREWORD

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ISO/IEC TR 29106 edition 1.2 contains the first edition (2007-11), its amendment 1 (2012-12) and its amendment 2 (2019-07) [documents JTC1-SC25/2836/DTR and JTC1-SC25/2853/RVDTR].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendments 1 and 2. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

The main task of IEC and ISO technical committees is to prepare International Standards. In exceptional circumstances, ISO/IEC JTC 1 or a subcommittee may propose the publication of a technical report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where, for any other reason, there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when the technical committee has collected data of a different kind from that which is normally published as an International Standard, for example 'state of the art'.

ISO/IEC 29106, which is a Technical Report of type 3, has been prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

Technical reports of types 1 and 2 are subject to review within three years of publication to decide whether they can be transformed into International Standards. Technical reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

This Technical Report of type 3 has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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 to Amendment 1

The Amendment has been developed to correct the misalignment of the MICE table with ISO/IEC 24702.

INFORMATION TECHNOLOGY – GENERIC CABLING – INTRODUCTION TO THE MICE ENVIRONMENTAL CLASSIFICATION

1 Scope

This Technical Report acts as an introduction to the concepts used to develop the MICE environmental classification system used in cabling standards developed by ISO/IEC. It also provides detailed explanation of the sources used to define the boundaries of MICE classifications.

2 Reference documents

The following referenced documents are indispensable for the application 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, *Information technology – Generic cabling for customer premises*~~

ISO/IEC 11801-1:2017, *Information technology – Generic cabling for customer premises – Part 1: General requirements*

ISO/IEC 11801-2, *Information technology – Generic cabling for customer premises – Part 2: Office premises*

ISO/IEC 11801-3, *Information technology – Generic cabling for customer premises – Part 3: Industrial premises*

ISO/IEC 11801-4, *Information technology – Generic cabling for customer premises – Part 4: Single-tenant homes*

ISO/IEC 11801-5, *Information technology – Generic cabling for customer premises – Part 5: Data centres*

ISO/IEC 11801-6, *Information technology – Generic cabling for customer premises – Part 6: Distributed building services*

~~ISO/IEC 15018, *Information technology – Generic cabling for homes*~~

~~ISO/IEC 24702, *Information technology – Generic cabling – Industrial premises*~~

IEC 60068-2-5:1975, *Environmental testing – Part 2: Tests. Test Sa: Simulated solar radiation at ground level*

IEC 60654-4:1987 *Operating conditions for industrial-process measurement and control equipment. Part 4: Corrosive and erosive influences*

IEC 60721-1, *Classification of environmental conditions – Part 1: Environmental parameters and their severities*

IEC 60721-3-3, *Classification of environmental conditions – Part 3-3: Classification of groups of environmental parameters and their severities - Stationary use at weatherprotected locations*

~~IEC 61000-2-5, *Electromagnetic compatibility (EMC) – Part 2: Environment – Section 5: Classification of electromagnetic environments. Basic EMC publication*~~

IEC 61000-6-1, *Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity for residential, commercial and light-industrial environments*

IEC 61000-6-2, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments*

IEC 61131-2, *Programmable controllers – Part 2: Equipment requirements and tests*

~~IEC 61326:2001, *Electrical equipment for measurement, control and laboratory use – EMC requirements*~~

IEC 61918, *Industrial communication networks – Installation of communication networks in industrial premises*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

~~For the purposes of this Technical Report the definitions of the applicable generic cabling standards ISO/IEC 11801, ISO/IEC 15018 and ISO/IEC 24702 apply.~~

For the purposes of this document, the terms and definitions of the applicable parts of ISO/IEC 11801 apply.

3.2 Abbreviations

~~For the purposes of this Technical Report the abbreviations of the applicable generic cabling standards ISO/IEC 11801, ISO/IEC 15018 and ISO/IEC 24702 apply.~~

For the purposes of this document, the abbreviations of the applicable parts of ISO/IEC 11801 apply.

4 Application of environmental classification

4.1 MICE

The term MICE referenced in generic cabling standards produced by ISO/IEC[1] relates to the classification of the environment of the cabling channel.

There are four primary environmental criteria used to classify an environment:

- the M element, defining the mechanical characteristics of the environment;
- the I element, defining the ingress protection characteristics of the environment;
- the C element, defining the climatic and chemical characteristics of the environment;
- the E element, defining the electromagnetic characteristics of the environment.

Each of the four primary environmental criteria are further divided into specific parameters and levels for those parameters. The MICE classification for a given location is therefore defined as $M_aI_bC_cE_d$ where a, b, c and d are the individual sub-classifications (levels) for the M, I, C and E criteria respectively.

[1] The documents prepared by subcommittee 25 of ISO/IEC joint technical committee 1: Information technology.

The suffixes for the four primary environmental criteria are either 1, 2 or 3. For example, the most benign environment is described as $M_1I_1C_1E_1$ whereas the most harsh environment within the scope of this standard would be defined as $M_3I_3C_3E_3$.

4.2 Channel environment

The applicable MICE classification may vary along the length of the cabling channel. As shown in the industrial premises cabling example of Figure 1, the ingress protection characteristics of the environment in the automation area and at the automation island are different from, and more severe than, those characteristics on the factory floor or in the telecommunications room.

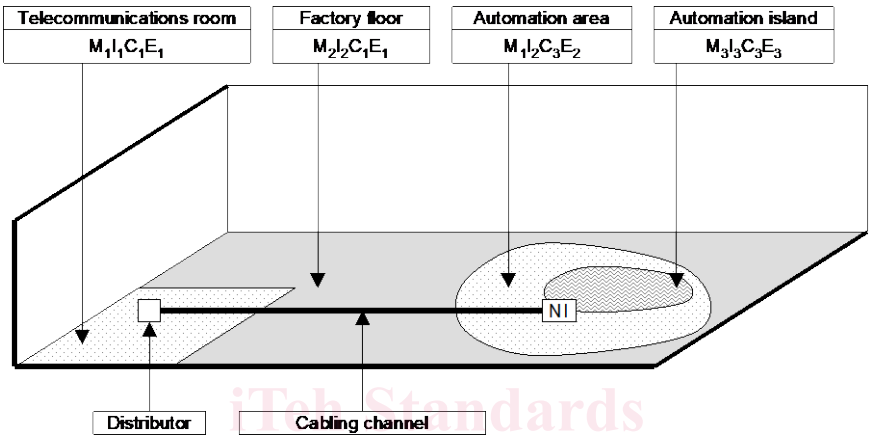

Figure 1 – Example of variation of the environment along an industrial premises cabling channel

The environment to be classified is that local to the cabling. Where no environmental protection is provided to the cabling, the classification of the local environment is also that of the overall environment at that location.

However, where technical or economic restrictions preclude the use of components compatible with the overall environment, mitigation or isolation techniques may be applied to modify one or more of the M, I, C or E environments local to the cabling in order to allow appropriate components to be installed.

The mitigation or isolation techniques typically involve the use of alternative pathways and/or pathway systems as shown in Figure 2.

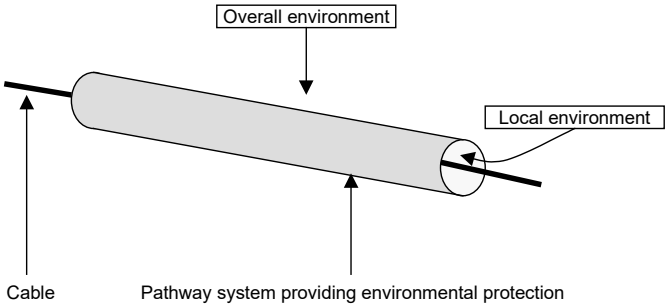

Figure 2 – The local environment

4.3 Component selection

The components used within a channel should be selected to be compatible with the MICE classification of the channel at the point where the components are to be installed.