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colour inside

Connectors for electrical and electronic equipment – Tests and measurements – Part 99-002: Endurance test schedules – Test 99b: Test schedule for unmating under electrical load

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CONTENTS

FOREWORD 3
1 Scope 5
2 Normative references 5
3 Terms and definitions 6
4 General 6
5 Preparation of specimens 6
6 Test circuit requirements 7
6.1 General 7
6.2 Voltage and current 9
6.3 Auxiliary equipment 9
7 Test methods 10
7.1 ~~Initial cycles~~ Mechanical operations with electrical load 10
7.2 Flowing mixed gas corrosion 10
~~7.3 Final cycles ..... 10~~
8 Tests and test schedule – Test group UEL 1 10
Annex A (informative) Test voltage and current setting instructions 14
A.1 General 14
A.2 Rationale 14
A.3 Suggested setting instructions 14
Bibliography 15

Figure 1 – Test circuit details 8

~~Table 1 – Maximum electrical circuit current ..... 11~~
Table 1 – Test group UEL 1 11
Table A.1 – Maximum electrical circuit current per IEEE 802.3 14

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – TESTS AND MEASUREMENTS –

Part 99-002: Endurance test schedules – Test 99b: Test schedule for unmating under electrical load

FOREWORD

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IEC 60512-99-002 has been prepared by subcommittee 48B: Electrical connectors, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment. It is an International Standard.

This second edition cancels and replaces the first edition published in 2019. This edition constitutes a technical revision.

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

a) Test group UEL has been revised with respect to the order of the test phases, the test severities and the requirements.

The text of this International Standard is based on the following documents:

Draft	Report on voting
48B/2922/FDIS	48B/2938/RVD

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 International Standard 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, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 60512 series, published under the general title *Connectors for electrical and electronic equipment – Tests and measurements*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – TESTS AND MEASUREMENTS –

Part 99-002: Endurance test schedules – Test 99b: Test schedule for unmating under electrical load

1 Scope

This part of IEC 60512 is used for ~~testing~~ the assessment of connectors within the scope of SC 48B that are used in twisted pair communication cabling with remote power, such as ISO/IEC 11801-1 Class D, or better, balanced cabling in support of ~~IEEE Std 802.3bt™, (PoE Plus – Power over Ethernet Plus)~~ IEEE 802.3bt™ (Power over Ethernet, supporting up to 90 W from the power sourcing equipment).

The object of this document is to detail a test schedule to determine the ability of ~~pairs~~ sets of connectors to withstand a ~~sequence of tests with a total of 100 engagements and separations. The electrical current is passed through the connectors during the separation (unmating) step only, in accordance with IEC 60512-9-3~~ minimum of 100 mechanical operations with electrical load, where an electrical current is being passed through the connectors in accordance with IEC 60512-9-3 during the separation (unmating) step.

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.

IEC 60512-1-1, *Connectors for electronic equipment – Tests and measurements – Part 1-1: General examination – Test 1a: Visual examination*

IEC 60512-2-1, *Connectors for electronic equipment – Tests and measurements – Part 2-1: Electrical continuity and contact resistance tests – Test 2a: Contact resistance – Millivolt level method*

IEC 60512-3-1, *Connectors for electronic equipment – Tests and measurements – Part 3-1: Insulation tests – Test 3a: Insulation resistance*

IEC 60512-4-1, *Connectors for electronic equipment – Tests and measurements – Part 4-1: Voltage stress tests – Test 4a: Voltage proof*

IEC 60512-9-3~~:2011~~, *Connectors for electronic equipment – Tests and measurements – Part 9-3: Endurance tests – Test 9c: Mechanical operation (engaging and separating) with electrical load*

IEC 60512-11-7, *Connectors for electronic equipment – Tests and measurements – Part 11-7: Climatic tests – Test 11g: Flowing mixed gas corrosion test*

~~IEC 60512-99-001, *Connectors for electronic equipment – Tests and measurements – Part 99-001: Test schedule for engaging and separating connectors under electrical load – Test 99a: Connectors used in twisted pair communication cabling with remote power*~~

~~ISO/IEC 11801(all parts): *Information technology – Generic cabling for customer premises*~~

~~ISO/IEC TS 29125: 2017, *Information technology – Telecommunications cabling requirements for remote powering of terminal equipment*~~

~~TIA-568-A:1995, *Commercial building telecommunications cabling standard*~~

~~TIA-568-B.2:2001, *Commercial building telecommunications cabling standard, Part 2: Balanced twisted-pair cabling components*~~

~~TIA TSB-184-A:2017, *Guidelines for supporting power delivery over balanced twisted-pair cabling*~~

IEEE Std 802.3™-2018, *IEEE Standard for Ethernet*

IEEE Std 802.3bt™-2018, *IEEE Standard for Ethernet. Amendment 2: Physical Layer and Management Parameters for Power over Ethernet over 4 pairs*

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Connectors for electrical and electronic equipment – Tests and measurements – Part 99-002: Endurance test schedules – Test 99b: Test schedule for unmating under electrical load

Connecteurs pour équipements électriques et électroniques – Essais et mesures – Partie 99-002: Programmes d'essais d'endurance – Essai 99b: Programme d'essai pour le désaccouplement sous charge électrique



IEC 60512-99-002:2022-01(en-fr)

CONTENTS

FOREWORD 3
1 Scope 5
2 Normative references 5
3 Terms and definitions 6
4 General 6
5 Preparation of specimens 6
6 Test circuit requirements 6
6.1 General 6
6.2 Voltage and current 7
6.3 Auxiliary equipment 8
7 Test methods 8
7.1 Mechanical operations with electrical load 8
7.2 Flowing mixed gas corrosion 8
8 Tests and test schedule – Test group UEL 1 8
Annex A (informative) Test voltage and current setting instructions 11
A.1 General 11
A.2 Rationale 11
A.3 Suggested setting instructions 11
Bibliography 12

Figure 1 – Test circuit details 7

Table 1 – Test group UEL 1 9
Table A.1 – Maximum electrical circuit current per IEEE 802.3 11

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CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT – TESTS AND MEASUREMENTS –

Part 99-002: Endurance test schedules – Test 99b: Test schedule for unmating under electrical load

1 Scope

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The object of this document is to detail a test schedule to determine the ability of sets of connectors to withstand a minimum of 100 mechanical operations with electrical load, where an electrical current is being passed through the connectors in accordance with IEC 60512-9-3 during the separation (unmating) step.

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IEC 60512-4-1, *Connectors for electronic equipment – Tests and measurements – Part 4-1: Voltage stress tests – Test 4a: Voltage proof*

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IEC 60512-11-7, *Connectors for electronic equipment – Tests and measurements – Part 11-7: Climatic tests – Test 11g: Flowing mixed gas corrosion test*

IEEE Std 802.3™-2018, *IEEE Standard for Ethernet*

IEEE Std 802.3bt™-2018, *IEEE Standard for Ethernet. Amendment 2: Physical Layer and Management Parameters for Power over Ethernet over 4 pairs*

SOMMAIRE

AVANT-PROPOS 15
1 Domaine d'application 17
2 Références normatives 17
3 Termes et définitions 18
4 Généralités 18
5 Préparation des spécimens 18
6 Exigences relatives au circuit d'essai 18
6.1 Généralités 18
6.2 Tension et intensité 19
6.3 Equipement auxiliaire 20
7 Méthodes d'essai 20
7.1 Manœuvres mécaniques avec charge électrique 20
7.2 Corrosion dans un flux de mélange de gaz 20
8 Essais et programme d'essai – Groupe d'essais UEL 1 20
Annexe A (informative) Instructions de réglage de la tension et de l'intensité d'essai 23
A.1 Généralités 23
A.2 Justifications 23
A.3 Instructions de réglage suggérées 23
Bibliographie 25

Figure 1 – Détails du circuit d'essai 19

Tableau 1 – Groupe d'essais UEL 1 21
Tableau A.1 – Intensité électrique maximale du circuit selon l'IEEE 802.3 23

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CONNECTEURS POUR ÉQUIPEMENTS ÉLECTRIQUES ET ÉLECTRONIQUES – ESSAIS ET MESURES –

Partie 99-002: Programmes d'essais d'endurance – Essai 99b: Programme d'essai pour le désaccouplement sous charge électrique

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Cette deuxième édition annule et remplace la première édition parue en 2019. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

a) Le groupe d'essais UEL a été révisé en ce qui concerne l'ordre des phases d'essai, des sévérités d'essai et des exigences.

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
48B/2922/FDIS	48B/2938/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie°1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/standardsdev/publications.

Une liste de toutes les parties de la série IEC 60512, publiées sous le titre général *Connecteurs pour équipements électroniques – Essais et mesures*, se trouve sur le site web de l'IEC.

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CONNECTEURS POUR ÉQUIPEMENTS ÉLECTRIQUES ET ÉLECTRONIQUES – ESSAIS ET MESURES –

Partie 99-002: Programmes d'essais d'endurance – Essai 99b: Programme d'essai pour le désaccouplement sous charge électrique

1 Domaine d'application

La présente partie de l'IEC 60512 est utilisée pour évaluer des connecteurs relevant du domaine d'application du SC 48B, qui sont utilisés dans les câblages de communication à paires torsadées permettant une alimentation à distance, tels que les câbles à paires symétriques conformes à la classe D de l'ISO/IEC 11801-1 ou à une classe supérieure, à l'appui de la norme IEEE 802.3bt™ (Power over Ethernet (alimentation électrique par câble Ethernet), prenant en charge jusqu'à 90 W provenant de l'équipement de source d'alimentation).

L'objet du présent document est de détailler un programme d'essai permettant de déterminer l'aptitude des jeux de connecteurs à supporter au moins 100 manœuvres mécaniques avec charge électrique lorsqu'un courant électrique traverse les connecteurs conformément à l'IEC 60512-9-3 pendant la séparation (désaccouplement).

2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60512-1-1, *Connecteurs pour équipements électroniques – Essais et mesures – Partie 1-1: Examen général – Essai 1a: Examen visuel*

IEC 60512-2-1, *Connecteurs pour équipements électroniques – Essais et mesures – Partie 2-1: Essais de continuité électrique et de résistance de contact – Essai 2a: Résistance de contact – Méthode du niveau des millivolts*

IEC 60512-3-1, *Connecteurs pour équipements électroniques – Essais et mesures – Partie 3-1: Essais d'isolement – Essai 3a: Résistance d'isolement*

IEC 60512-4-1, *Connecteurs pour équipements électroniques – Essais et mesures – Partie 4-1: Essais de contrainte diélectrique – Essai 4a: Tension de tenue*

IEC 60512-9-3, *Connecteurs pour équipements électroniques – Essais et mesures – Partie 9-3: Essais d'endurance – Essai 9c: Fonctionnement mécanique (d'accouplement et de désaccouplement) avec charge électrique*

IEC 60512-11-7, *Connecteurs pour équipements électroniques – Essais et mesures – Partie 11-7: Essais climatiques – Essai 11g: Essai de corrosion dans un flux de mélange de gaz*

IEEE Std 802.3™-2018, *IEEE Standard for Ethernet*

IEEE Std 802.3bt™-2018, *IEEE Standard for Ethernet. Amendment 2: Physical Layer and Management Parameters for Power over Ethernet over 4 pairs*