IEC 62026-1

Edition 3.0 2019-05
REDLINE VERSION

INTERNATIONAL STANDARD

colour inside

Low-voltage switchgear and controlgear – Controller-device interfaces (CDIs) – Part 1: General rules

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.130.20

ISBN 978-2-8322-6929-9

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR – CONTROLLER-DEVICE INTERFACES (CDIs) –

Part 1: General rules

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

International Standard IEC 62026-1 has been prepared by subcommittee 121A: Low-voltage switchgear and controlgear, of IEC technical committee 121: Switchgear and controlgear and their assemblies for low voltage.

This third edition cancels and replaces the second edition published in 2007. This edition constitutes a technical revision.

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

a) additional requirements for safety information and instructions, including the measures to be taken, if any, for achieving EMC compliance;
b) EMC immunity requirements aligned with current IEC 61000-6 series of standards. Radiated radio-frequency electromagnetic fields test level increased to 6 GHz;
c) EMC emissions requirements aligned with current CISPR 11 publication.

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

FDIS	Report on voting
121A/280/FDIS	121A/295/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

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

A list of all parts of the IEC 62026, under the general title *Low-voltage switchgear and controlgear – Controller-device interfaces (CDIs)*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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 publication using a colour printer.

INTRODUCTION

The class of controller-device interfaces (CDIs) covered in this document includes industrial CDIs for control systems, factory automation and process automation.

Industrial CDIs have proliferated to meet specific user needs, but no single CDI meets all needs. The reason for multiple solutions is the wide range of physical, usage, information content and configuration requirements. The physical requirements have resulted in CDIs with widely differing signal and line conditioning mechanisms in order to meet distance, node count and environmental considerations.

While there is wide variation in CDI technologies, there are common components, interfaces and environmental requirements that are specified by this document. Standardized definitions of these common CDI requirements assist the user in comparing and selecting technologies to match the distance, node count, throughout and installation requirements for a specific application.

This document simplifies the CDI selection process by providing a common structure for generating a specific CDI's IEC standard while also allowing specific interface features and capabilities to be included. Clauses ~~1~~ 4 to 8 contain the outline of general requirements that the CDI's IEC standard identifies. Clause 9 contains the test specification.

Standardization of CDI aspects also simplifies the task of writing the software for the higher layer functions of industrial control systems, such as supervisory control, operator interface and control strategy programming.

For this document to be complete and usable, it requires the availability of specific CDI standards, which make up the other parts of the IEC 62026 series.

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR – CONTROLLER-DEVICE INTERFACES (CDIs) –

Part 1: General rules

1 Scope

This part of IEC 62026 applies to interfaces between low-voltage switchgear, controlgear, and controllers (e.g. programmable controllers, personal computers, etc.).

This document does not apply to higher level industrial communication networks that have become known as fieldbuses and are considered by IEC subcommittee 65C.

The purpose of this document is to harmonize and define rules, components and requirements of a general nature applicable to industrial CDIs. Those features of the various CDI standards which can be considered as general have therefore been brought together in this document.

For each CDI, two main documents are necessary to determine all requirements and tests:

a) this document, referred to as “IEC 62026-1” in the relevant CDI parts covering the various types of CDIs;

b) the specific CDI part of the IEC 62026 series.

A specific CDI part may omit a general requirement if it is not applicable, or it may add to it if it is inadequate in the particular case~~, but it should not deviate from the requirement unless there is substantial technical justification~~.

NOTE Product-specific requirements for products incorporating a CDI are given in the relevant product standards. These requirements apply in addition to those given in this document.

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 60947-1:2007, *Low-voltage switchgear and controlgear – Part 1: General rules*
IEC 60947-1:2007/AMD1:2010
IEC 60947-1:2007/AMD2:2014

IEC 61000-4-2:~~1995~~2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*
~~Amendment 1 (1998)~~
~~Amendment 2 (2000)~~

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*
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IEC 61000-4-5:~~2005~~2014, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*
IEC 61000-4-5:2014/AMD1:2017

IEC 61000-4-6:~~2003~~2013, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*
~~Amendment 1 (2004)~~
~~Amendment 2 (2006)~~

IEC 61000-6-2:~~2005~~2016, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments*

CISPR 11:~~2003~~2015, *Industrial, scientific and medical ~~(ISM) radio-frequency~~ equipment – ~~Electromagnetic~~ Radio-frequency disturbance characteristics – Limits and methods of measurement*
~~Amendment 1 (2004)~~
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CISPR 11:2015/AMD1:2016

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NORME INTERNATIONALE

Low-voltage switchgear and controlgear – Controller-device interfaces (CDIs) – Part 1: General rules

Appareillage à basse tension – Interfaces appareil de commande-appareil (CDI) – Partie 1: Règles générales

IEC 62026-1:2019-05(en-fr)

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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APPAREILLAGE À BASSE TENSION – INTERFACES APPAREIL DE COMMANDE-APPAREIL (CDI) –

Partie 1: Règles générales

AVANT-PROPOS

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La Norme internationale IEC 62026-1 a été établie par le sous-comité 121A: Appareillage à basse tension, du comité d'études 121 de l'IEC: Appareillages et ensembles d'appareillages basse tension.

Cette troisième édition annule et remplace la deuxième édition parue en 2007. Cette édition constitue une révision technique.

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

a) exigences supplémentaires pour les informations et les instructions relatives à la sécurité, notamment les mesures à prendre, s'il y a lieu, pour parvenir à la conformité CEM;

b) alignement des exigences CEM concernant l'immunité sur celles de la série de normes IEC 61000-6. Niveau d'essai des champs électromagnétiques rayonnés aux fréquences radioélectriques porté à 6 GHz;

c) alignement des exigences CEM concernant les émissions sur celles de la publication CISPR 11 actuelle.

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

FDIS	Rapport de vote
121A/280/FDIS	121A/295/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette Norme internationale.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2.

Une liste de toutes les parties de la série IEC 62026, publiées sous le titre général *Appareillage à basse tension – Interfaces appareil de commande-appareil (CDI)*, peut être consultée sur le site web de l'IEC.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous "http://webstore.iec.ch" dans les données relatives au document recherché. A cette date, le document sera

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- remplacé par une édition révisée, ou
- amendé.

INTRODUCTION

La classe d'interfaces appareil de commande-appareil (CDI) couverte par le présent document inclut les CDI industrielles pour les systèmes de commande, l'automatisation d'usine et les processus automatisés.

Les CDI industrielles ont proliféré pour satisfaire aux besoins d'utilisateurs spécifiques, mais aucune CDI ne satisfait à tous les besoins. Des solutions multiples ont été mises en œuvre pour répondre à l'éventail des exigences concernant le matériel, l'utilisation, le contenu d'information et la configuration. Les exigences matérielles ont conduit à des CDI ayant des signaux et des mécanismes d'adaptation de ligne qui diffèrent fortement pour satisfaire aux aspects de distance, de nombre de nœuds et d'environnement.

Bien qu'il y ait une grande diversité de techniques de CDI, il existe des exigences communes aux composants, aux interfaces et aux conditions d'environnement qui sont spécifiées dans le présent document. Des définitions normalisées de ces exigences communes aux CDI aident l'utilisateur à comparer et à choisir les techniques correspondant aux exigences de distance, de nombre de nœuds, d'entrée-sortie et d'installation pour une application donnée.

Le présent document simplifie le processus de choix d'une CDI en fournissant une structure commune permettant de créer une norme IEC pour une CDI particulière, tout en autorisant aussi l'inclusion de caractéristiques et d'aptitudes spécifiques à cette interface. Les Articles 4 à 8 contiennent l'esquisse des exigences générales que la norme IEC spécifique à une CDI identifie. L'Article 9 contient les spécifications relatives aux essais.

La normalisation des aspects des CDI simplifie aussi l'écriture du logiciel pour les fonctions de la couche supérieure des systèmes de commande industriels, telles que la programmation de la commande de supervision, de l'interface opérateur et de la stratégie de commande.

Pour que le présent document soit complet et utilisable, il requiert la disponibilité de normes relatives aux CDI particulières, qui constituent les autres parties de la série IEC 62026.

APPAREILLAGE À BASSE TENSION – INTERFACES APPAREIL DE COMMANDE-APPAREIL (CDI) –

Partie 1: Règles générales

1 Domaine d'application

La présente partie de l'IEC 62026 s'applique aux interfaces entre l'appareillage à basse tension et des appareils de commande (par exemple automates programmables, ordinateurs personnels, etc.).

Le présent document ne s'applique pas aux réseaux de communication industriels de plus haut niveau connus sous le nom de bus de terrain et qui relèvent du sous-comité 65C de l'IEC.

Le présent document vise à harmoniser et définir les règles, les composants et les exigences de nature générale applicables aux CDI industrielles. Les caractéristiques générales des normes des différentes CDI ont donc été rassemblées dans le présent document.

Pour chaque CDI, deux documents principaux sont nécessaires pour définir l'ensemble des exigences et des essais:

a) le présent document, cité sous la référence "IEC 62026-1" dans les parties pertinentes couvrant les différents types de CDI;
b) la partie de la série IEC 62026 spécifique à une CDI.

Une partie relative à une CDI particulière peut omettre une exigence générale si elle n'est pas applicable, ou elle peut la compléter si elle ne convient pas dans le cas particulier.

NOTE Les exigences spécifiques aux produits incorporant une CDI sont données dans les normes de produit pertinentes. Ces exigences s'appliquent en plus de celles données dans le présent document.

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 60947-1:2007, *Appareillage à basse tension – Partie 1: Règles générales*
IEC 60947-1:2007/AMD1:2010
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IEC 61000-4-2:2008, *Compatibilité électromagnétique (CEM) – Partie 4-2: Techniques d'essai et de mesure – Essai d'immunité aux décharges électrostatiques*

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