SLOVENSKI STANDARD
SIST EN IEC 61131-2:202X/oprAA:2024

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Merjenje in nadzor v industrijskih procesih - Programirljivi krmilniki - 2. del: Zahteve za opremo in preskusi

Industrial-process measurement and control - Programmable controllers - Part 2: Equipment requirements and tests

Speicherprogrammierbare Steuerungen - Teil 2: Betriebsmittelanforderungen und Prüfungen

Mesurage et contrôle des processus industriels - Automates programmables - Partie 2: Exigences et essais des équipements

Ta slovenski standard je istoveten z: **EN IEC 61131-2:202X/prAA:2024**

ICS:

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
35.240.50	Uporabniške rešitve IT v industriji	IT applications in industry

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS -

English Version

Industrial-process measurement and control - Programmable controllers - Part 2: Equipment requirements and tests

Mesurage et contrôle des processus industriels - Automates programmables - Partie 2: Exigences et essais des équipements

Speicherprogrammierbare Steuerungen - Teil 2: Betriebsmittelanforderungen und Prüfungen

This draft amendment prAA, if approved, will modify the European Standard EN IEC 61131-2:202X; it is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2024-08-09.

It has been drawn up by CLC/TC 65X.

If this draft becomes an amendment, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

This draft amendment was established by CENELEC in three official versions (English, French, German).
A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

This document (EN IEC 61131-2:202X/prAA:2024) has been prepared by CLC/TC 65X “Industrial-process measurement, control and automation”.

This document is currently submitted to the Enquiry.

The following dates are proposed:

• latest date by which the existence of this document has to be announced at national level	(doa)	dor + 6 months
• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	dor + 12 months
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	dor + 36 months (to be confirmed or modified when voting)

This document will amend EN IEC 61131-2:202X.

EN IEC 61131-2:202X/prAA:2024 includes the following significant technical changes with respect to EN IEC 61131-2:202X:

— Modification of the scope

— Modification of test conditions

— Modification of EMC requirements

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZZ, which is an integral part of this document.

Introduction

The purpose of this amendment is to identify and modify the requirements that would not fit the EMCD requirements, so that the amendment could be harmonized under this Directive.

1 Modifications to Clause 1, “Scope”

Replace the full text below Figure 1 of Clause 1 with:

“Components of the above-named equipment and within the scope of this document are, for example:

— (auxiliary) stand-alone power supplies;

— peripherals such as digital and analogue I/O;

— remote-I/O;

— industrial network equipment, embedded or stand-alone (e.g. switches, routers, wireless base station).

Control equipment and their associated peripherals are intended to be used in an industrial environment and are provided as either OPEN or ENCLOSED EQUIPMENT.

NOTE Control equipment intended also for use in other environments or for other purposes (example: for use in building installations to control light or other electrical installations, or for use on cars, trains or ships) can have additional conformity requirements defined by the safety standard(s) for these applications. These requirements can involve for example: insulation, spacings and power restrictions.

Equipment covered in this document is intended for use in overvoltage category II (IEC 60664-1) in low-voltage installations, where the rated equipment supply voltage does not exceed AC 1 000 V r.m.s. (50/60 Hz), or DC 1 000 V. If control equipment or their associated peripherals are applied in overvoltage category III installations, then additional analysis will be required to determine the suitability of the equipment for those applications.

The object of this document is to define clear, complete, and exhaustive technical requirements to products falling in its scope.

Safety requirements for control equipment and their associated peripherals are specified in IEC 61010-2-201.”

2 Modification to Clause 2, “Normative references”

Add the following references:

IEC 61000-3-2:2018,[1] *Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤16 A per phase)*

IEC 61000-3-3:2013,[2] *Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection*

3 Modifications to Clause 4, “Compliance and type tests”

Replace the first paragraph after the listing of options in 4.1 with:

NOTE All equipment is expected to comply with the requirements in Clause 7, Electromagnetic compatibility (EMC) requirements.

Replace the last paragraph of 4.1 with:

[1] As impacted by IEC 61000-3-2:2018/A1:2020 and IEC 61000-3-2:2018/A2:2024.

[2] As impacted by IEC 61000-3-3:2018/A1:2017, IEC 61000-3-3:2018/A2:2021 and IEC 61000-3-3:2018/A2:2021/COR1:2022.

"If different options are defined for normal service condition (e.g. OTH3, OTH4 …) or different realization of functional requirements (e.g. Type 1 or Type 3 digital inputs) possible, the product documentation shall clearly specify which option has been realized or the equipment has been evaluated against."

Replace the second sentence of the second paragraph in 4.2.1 with:

"In accordance with the scope of this document, the conformance verification described above cannot reflect every specific application of the intended automated control application. However, the test configuration should be a typical, representative application."

Add at the end of 4.2.1 the following sentence:

"A test plan shall be established prior to testing."

Replace the last sentence of the first paragraph in 4.2.2 with:

"Thus, it is reasonable, and recommended, not to test every possible arrangement. Therefore, the equipment assembly shall represent a typical installation as specified in the product documentation. All equipment, racks, modules, boards, etc. significant to type test and belonging to the EUT shall be documented. If relevant, the software version shall be documented."

Delete the second paragraph in 4.2.2.

Replace the third paragraph in 4.2.2 with:

"Unless otherwise specified in this document, various number of EUTs may be elected to achieve the objectives of a given type test."

Replace the last sentence of the paragraph below Figure 2 in 4.2.2 with:

"To exercise different characteristics, capabilities, ports, etc. of each EUT, subsystems may be defined and the different EUTs are tested in turn."

Replace the example b) in 4.2.2 with the following:

"b) to check the electrical interference immunity of the EUT, between the following cases can be chosen, as applicable:"

Replace the last sentence of case 2) in 4.2.2 with:

"For practical reasons, actual PADTs/TEs/RIOS to exercise the EUT ports may be elected."

Replace the sentence after the list of examples and cases in 4.2.2 with:

"If there are too many families to be included into a single EUT, several EUTs shall be defined as follows:"

Replace the first bullet point in 4.2.2 with:

"

— For the type testing of a family of very similar modules (family, i.e. modules that are technically identical, e.g. use the same schematic and the same basic manufacturing process and differ mainly by, for example, the number of inputs and outputs),only one module of the family can be arbitrarily chosen as EUT. If the type test is depends on the differences between the modules, not only one module of the family may be used."

Replace the last sentence of the last but two paragraph in 4.2.2 with:

"This is only permissible if such EUTs and the associated test programs allow proper verification as if these new units/modules had been tested within the originally tested EUTs."

Replace the last but one paragraph in 4.2.2 with:

"Unless otherwise specified in this document, either each type test be conducted on a new EUT or several type tests be performed successively on the same EUT."

Replace the text of 4.2.3 with:

"Communication ports shall be connected as in normal use for ESD testing.

NOTE Pass-fail criteria are located in Table 1."

Replace the second sentence in 4.2.5 with:

"If the product documentation indicates components that are normally serviced by the service personnel, these components may be removed for the test."

Replace the second and third paragraph in 4.2.7 with:

"For each test, the test plan shall contain the following information:

— the EUT configuration, its arrangement and its external connections;

— the test programs which shall be run during the test;

— the proper operation verification procedure, e.g. including the way to measure accuracy and temporary deviations of analog I/Os.

The appropriate test programs and proper functioning verification procedures shall satisfy the requirements given in 4.2.8."

Add to the end of 4.2.2:

"A rationale for this election shall be documented in the test plan.

The EUT configuration and boundaries for EMC tests are defined in Clause 4.2.3 and the referenced generic EMC standards. Requirements defined in 4.2.2 should not be considered for EMC testing."

Replace the headline of 4.2.8 with:

"Requirements for test programs and proper functioning verification procedures (PFVPs)"

Replace the fourth paragraph in 4.2.8 with:

"

NOTE If the EUT provides many I/Os, the testing body can apply statistical methods to reduce the test effort."

Replace the fifth paragraph in 4.2.8 with:

"Industrial control equipment often consists of systems with no fixed configuration. The kind, number, and installation of different subassemblies within the equipment may vary from system to system. Thus, the tests shall be performed on the worst-case performance-relevant arrangement(s) covering all intended uses and carried out as TYPE TESTS."

Replace first sentence of 4.2.9 with:

"Verification test method performance criteria as described in Table 1 shall apply."

Replace Table 1 in 4.2.9 with:

"

Performance criterion		
Criterion	**Operation**	
	During test	**After test**
A	The EUT shall continue to operate as intended. No loss of function or performance, according to PFVPs (4.2.8)	The EUT shall continue to operate as intended
B	Degradation of performance accepted Examples: analog values vary within limits[a] as specified in product documentation, communication delay times vary within limits as specified in product documentation, flickering on HMI display, etc. No change of operating mode Examples: loss of data or uncorrected errors in communication, unintentional state changes of digital I/O which are seen by the EUT or test setup, etc. No irreversible loss of stored data, according to PFVPs (4.2.8)	The EUT shall continue to operate as intended. Temporary degradation of performance shall be self-recoverable
C	Loss of functions accepted, but no destruction of hardware or software (programme or data)	The EUT shall continue to operate as intended automatically, after manual restart or power off/power on
[a] See Table 48, item 4) and Table 52, item 3).		

“

4 Modifications to Clause 7, “Electromagnetic Compatibility (EMC) requirements”

Replace the first and second paragraph of 7.1 with:

“This Clause 7 specifies electromagnetic compatibility (EMC) requirements for industrial control equipment used in three different EMC Zones.

In general, industrial control equipment is intended for use in the industrial environment. This environment is defined as Zone B. Immunity and Emission requirements for products intended for use in this kind of environment bases on IEC 61000-6-2 and IEC 61000-6-4 with further additions by this document. Specific Emission and immunity requirements are described in 7.2 and 7.3.

Residential, commercial, or light-industrial environment is defined as Zone A. Immunity requirements for control equipment intended for use in this environment bases on IEC 61000-6-1 with further additions by this document.

Information about the intended environment shall be specified in the product documentation.”

Delete the first paragraph after Table 35 of 7.1.

Replace the fourth and fifth paragraph after Table 35 of 7.1 and add at the end of the subclause the following:

“

NOTE This document describes EMC requirements for control equipment and their associated I/O peripherals. Since the control equipment is only a component of the overall automated system, this document does not cover the EMC of the overall automated system.”

Replace the sixth paragraph after Table 35 of 7.1 with: