

Programmable controllers —

Part 1: General information

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This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on 15 December 1994

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Contents

	Page
Cooperating organizations	Inside front cover
National foreword	ii
Foreword	2
Text of EN 61131-1	5
National annex NA (informative) Committees responsible	Inside back cover
National annex NB (informative) Cross-references	Inside back cover

National foreword

This British Standard has been prepared under the direction of the Electrotechnical Sector Board and is the English language version of EN 61131-1:1994 *Programmable controllers — Part 1: General information*, published by the European Committee for Electrotechnical Standardization (CENELEC).

It is identical with IEC 1131-1:1992 published by the International Electrotechnical Commission (IEC). In adopting IEC 1131-1:1992 as EN 61131-1:1994 CENELEC added normative Annex ZA.

Annex A and Annex B form an integral part of this Part of BS EN 61131.

No British Standard is superseded.

BS EN 61131 consists of the following Parts under the general title *Programmable controllers*.

- *Part 1: General information*;
- *Part 2: Equipment requirements and tests*;
- *Part 3: Programming languages*;
- *Part 4: User guidelines*¹⁾.

It is envisaged that there will be a further Part on manufacturing message specification.

An IEC type 2 technical report (TR) will provide “pre-standardization” guidance for the implementation and application of the programming language defined in this Part of BS EN 61131, including such issues as operating system/program interaction and requirements for programming support environments.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 22, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ In preparation.

English version

Programmable controllers Part 1: General information

(IEC 1131-1:1992)

Automates programmables
Partie 1: Informations générales
(CEI 1131-1:1992)

Speicherprogrammierbare Steuerungen
Teil 1: Allgemeine Informationen
(IEC 1131-1:1992)

This European Standard was approved by CENELEC on 1994-03-08. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 1131-1:1992 could be accepted without textual changes, has shown that no common modifications were necessary for the acceptance as European Standard.

The reference document was submitted to the CENELEC members for formal vote and was approved by CENELEC as EN 61131-1 on 8 March 1994.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1995-03-15
- latest date of withdrawal of conflicting national standards (dow) 1995-03-15

For products which have complied with the relevant national standard before 1995-03-15, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2000-03-15.

Annexes designated “normative” are part of the body of this standard. In this standard, Annex A, Annex B and Annex ZA are normative.

Contents

	Page
Foreword	2
1 General	5
1.1 Scope	5
1.2 Object of the standard	5
1.3 Object of this part	5
1.4 Normative references	5
2 Definitions	6
3 Glossary	12
4 Functional characteristics	13
4.1 Basic functional structure of a programmable controller system	13
4.1.1 General structure	13
4.1.2 Signal processing function	13
4.1.3 interface function to sensors and actuators	13
4.1.4 Communication function	14
4.1.5 Man-machine interface (MMI) function	14
4.1.6 Programming, debugging, testing and documentation functions	14
4.1.7 Power supply functions	14
4.2 Characteristics of the signal processing function	15
4.2.1 Operating system	15
4.2.2 Memory for application program and application data storage	15
4.2.3 Execution of the application program	16
4.3 Characteristics of the interface function to sensors and actuators	16
4.3.1 Types of input/output signals	16
4.3.2 Characteristics of the input/output system	16
4.4 Characteristics of the communication function	16
4.5 Characteristics of the man-machine interface (MMI) function	16
4.6 Characteristics of the programming, debugging, monitoring, testing and documentation functions	16
4.6.1 Writing the application program	16
4.6.2 Automated system startup	17
4.6.3 Documentation	17
4.6.4 Application program archiving	17
4.7 Characteristics of the power supply functions	17
4.8 Availability and reliability	18
4.8.1 Architecture of the automated system	18

	Page
4.8.2 Architecture of the programmable controller system	18
4.8.3 Design, testing and maintenance of the application program	18
4.8.4 Installation and service conditions	18
4.9 Ergonomic characteristics	18
4.9.1 General	18
4.9.2 Status indicators	18
4.9.3 Displays	18
4.9.4 Keyboards	18
4.9.5 Other recommendations	18
Annex A (normative) Illustration of programmable controller system hardware definitions	19
Annex B (normative) Typical interface diagram of a programmable controller system	20
Annex ZA (normative) Other international publications quoted in this standard with the references of the relevant European publications	21
Figure 1 — Basic functional structure of a PC-system	14
Figure A.1 — Programmable controller system (PC-system)	19
Figure B.1 — Typical interface diagram of a programmable controller system	20
Table 1 — Summary of programmable functions	15

1. General

1.1 Scope

The International Standard IEC 1131 applies to programmable controllers and their associated peripherals such as programming and debugging tools (PADTs), test equipment (TE) and man-machine interfaces (MMIs), etc.

Equipment covered in this standard is intended for use in overvoltage category II (see IEC 364-4-443), in low voltage installations, where the rated mains supply voltage does not exceed 1 000 V a.c. (50/60 Hz), or 1 500 V d.c., for the control and command of machines and industrial processes.

Programmable controllers and their associated peripherals are considered as components of a control system and may be provided as enclosed or open equipment. Therefore, *this standard does not deal with the automated system* in which the programmable controller system is but one basic component among many others including its application program.

Since programmable controllers are component devices, overall automated system safety including installation and application is beyond the scope of this standard. For further information, refer to IEC 1131-4 which is intended to help users in reducing the risks. However, electrical noise immunity and error detection of the PC-system operation such as the use of parity checking, self-testing diagnostics, etc., are addressed.

1.2 Object of the standard

The purposes of this standard are:

- to establish the definitions and identify the principal characteristics relevant to the selection and application of programmable controllers and their associated peripherals;
- to specify the minimum requirements for the functional characteristics, service conditions, construction characteristics, general safety and tests applicable to programmable controllers and their associated peripherals;
- to define, for each of the most commonly used programming languages, major fields of application, syntactic and semantic rules, simple but complete basic sets of programming elements, applicable tests and means by which manufacturers may expand or adapt those basic sets to their own programmable controller implementations;
- to give general tutorial information and application guidelines to the user;

— to define the communication between programmable controllers and other electronic systems using the Manufacturing Message Specification (MMS) defined in ISO/IEC 9506.

1.3 Object of this part

This part of IEC 1131 gives the definitions and contains a glossary of terms used in this standard. It identifies the principal functional characteristics of programmable controller systems.

1.4 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 1131. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 1131 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 50(55):1970, *International Electrotechnical Vocabulary — Chapter 55: Telegraphy and telephony*.

IEC 50(303):1983, *International Electrotechnical Vocabulary — Chapter 303: Electronic measuring instruments*.

IEC 50(351):1975, *International Electrotechnical Vocabulary — Chapter 351: Automatic control*.

IEC 271:1974, *List of basic terms, definitions and related mathematics for reliability*.

IEC 364-4-443:1990, *Electrical installations of buildings — Part 4: Protection for safety — Chapter 44: Protection against overvoltages — Section 443: Protection against overvoltages of atmospheric origin or due to switching*.

IEC 902:1987, *Industrial-process measurement and control — Terms and definitions*.

ISO 2382-1:1984, *Data processing — Vocabulary — Part 01: Fundamental terms*.

ISO 2382-4:1987, *Information processing systems — Vocabulary — Part 04: Organization of data*.

ISO 2382-5:1989, *Information processing systems — Vocabulary — Part 05: Representation of data*.

ISO/IEC 2382-7:1989, *Information technology — Vocabulary — Part 07: Computer programming*.

ISO 2382-11:1987, *Information processing systems — Vocabulary — Part 11: Processing units*.

ISO 2382-15:1985, *Data processing — Vocabulary — Part 15: Programming languages*.