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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PROGRAMMABLE CONTROLLERS –

Part 4 – User guidelines

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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The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

This part of the International Standard IEC 61131 has been prepared by subcommittee 65B: Devices, of IEC Technical Committee 65: Industrial-process measurement and control.

This second edition cancels and replaces the first edition published in 1995. It constitutes a technical revision.

This second edition of IEC 61131-4 differs extensively from the first edition. The first edition, IEC 61131-4:1995, initiated some twenty years ago, was mainly tutorial in nature. The present revision aims to provide an engineering overview of the IEC 61131 series for the end-user of PLC equipment who may not be expected to delve into the details of the extensive product standard that is IEC 61131.
The purpose of this revision is therefore to assist the end-users of PLCs to make efficient and effective use of the IEC 61131 series, and to realise the benefit of IEC standard compliant programmable controllers. This revised Technical Report serves as a quick reference and roadmap. Many of the IEC 61131 parts have gone through their maintenance cycle revisions. This revision of IEC 61131-4 is based on the latest revisions available.

The text of this technical report is based on the following documents:

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

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

IEC 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
Part 5: Communications
Part 7: Fuzzy control programming
Part 8: Guidelines for the application and implementation of programming languages

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

• reconfirmed;
• withdrawn;
• replaced by a revised edition, or
• amended.

A bilingual version of this Technical Report may be issued at a later date.
INTRODUCTION

This part of IEC 61131 constitutes the fourth part of a series of standards on programmable controllers and the associated peripherals and should be read in conjunction with the other parts of the series.

Where a conflict exists between this and other IEC standards (except basic safety standards), the provisions of this standard should be considered to govern in the area of programmable controllers and their associated peripherals.

Terms of general use are defined in IEC 61131-1. More specific terms are defined in each part.
1 General

1.1 Scope and object

The object of this Technical report is to introduce the end-users of Programmable Controller (PLC) to the IEC 61131 series, and to assist the end-users in their selection and specification of their PLC equipment according to the IEC 61131 series. This user guideline has as its main audience PLC end-users.

PLCs, their application program and their associated peripherals are considered as components of a control system. Therefore, PLC users should take note that this standard does not deal with the automated system in which the PLC and PLC system is but one component. However, when applying this user guideline, an overall system architecture evaluation is recommended. Functional safety of the overall automated system is beyond the scope of this standard.

An objective of this user guideline is to facilitate communication between the PLC user and PLC supplier according to the specifications of the IEC 61131 series that applies to PLCs and their associated peripherals. This information exchange is illustrated in Figure 1.
As depicted in Figure 1, the users consist of system integrators and end-users. The manufacturer of PLC is required by the IEC 61131 series to furnish appropriate product information to the user. Optionally, the user supplies operational requirements and specifications to the manufacturer in order to receive suitable products and services from the manufacturer. One objective of this Technical Report is therefore to assist in this communication, especially from the end-user's perspective. Accordingly, this Technical Report does not detail all the requirements of each and every part of the IEC 61131 series, such as conformance tests. The user should refer to the individual parts of the standard when needed.

1.2 Normative references

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.

IEC 61131-1: Programmable controllers – Part 1: General information
IEC 61131-2: Programmable controllers – Part 2: Equipment requirements and tests
IEC 61131-3: Programmable controllers – Part 3: Programming languages
IEC 61131-5: Programmable controllers – Part 5: Communications
IEC 61131-7: Programmable controllers – Part 7: Fuzzy control programming
IEC 61131-8: Programmable controllers – Part 8: Guidelines for the application and implementation of programming languages