

TECHNICAL SPECIFICATION

IEC 61158-6

First edition
1999-03

Digital data communications for measurement and control — Fieldbus for use in industrial control systems

Part 6: Application Layer protocol specification

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Reference number
IEC 61158-6:1999(E)

Numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series.

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For general terminology, readers are referred to IEC 60050: *International Electrotechnical Vocabulary (IEV)*.

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<https://standards.iteh.ai/catalog/standards/iec/2640e0c5-fdb9-47ce-8441-a8ebc8bf804a/iec-ts-61158-6-1999>

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE **XH**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

DIGITAL DATA COMMUNICATIONS FOR MEASUREMENT AND CONTROL –
FIELD BUS FOR USE IN INDUSTRIAL CONTROL SYSTEMS –

Part 6: Application Layer protocol specification

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 61158-6, which is a technical specification, has been prepared by subcommittee 65C: Digital communications, of IEC technical committee 65: Industrial-process measurement and control.

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

Enquiry draft	Report on voting
65C/200/FDIS	65C/208+208A/RVD

Full information on the voting for the approval of this technical specification 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 3.

IEC 61158 consists of the following parts, under the general title *Digital data communications for measurement and control — Fieldbus for use in industrial control systems*:

- Part 1: Introductory guide (under preparation)
- Part 2: Physical layer specification and service definition
- Part 3: Data Link Service definition
- Part 4: Data Link Protocol specification
- Part 5: Application Layer service definition
- Part 6: Application Layer protocol specification
- Part 7: System management (under consideration)
- Part 8: Conformance testing (under consideration)

Annexes A to O form an integral part of this technical specification.

Annexes P to R are for information only.

This publication will be reviewed by the committee responsible for its preparation before 2002. Information relating to confirmation, amendment or revision of the publication is available from the IEC web site (<http://www.iec.ch>) or from IEC Central Office.

A bilingual version of this technical specification may be issued at a later date.

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IEC TS 61158-6:1999

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INTRODUCTION

This technical specification describes the Fieldbus Application Layer (FAL) protocol that defines the information interchange and the interactions between Application Entity invocations (AE-Is) to support the services defined in IEC 61158-5.

An Application Process uses the Fieldbus Application Layer services to exchange information with other Application Processes. The services define the abstract interface between the application process and the Application Layer.

The Application Layer protocol is the set of rules that governs the format and meaning of the information exchange between the Application Layers in various devices. The Application Layer uses the protocol to implement the Application Layer services definitions.

The protocol machine defines the various states of an Application Layer and the valid transitions between the states. It may be considered as a finite state machine. The protocol machine is described using state tables. The information is exchanged between the application process and the protocol machine through application service data units. The protocol machine exchanges information with other protocol machines through application protocol data units (APDU).

This set of Application Layer standards does not specify individual implementations or products, nor does it constrain the implementations of Application Entities (AEs) and interfaces within the industrial automation system.

This set of Application Layer standards does not contain test procedures to ensure compliance with such requirements.

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