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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 47014.3-2026

**Industrial communication networks - Fieldbus specifications -
Type 2 elements: EtherNet/IP, ControlNet and DeviceNet
specifications - Part 3: Applicatoin layer service definition**

工业通信网络 现场总线规范 类型2元素: EtherNet/IP;ControlNet和DeviceNet
规范 第3部分: 应用层服务定义

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is based on GB/T 47014 "Industrial Communication Network Fieldbus Specification Type 2 Element. EtherNet/IP, ControlNet and..." Part 3 of the DeviceNet specification. GB/T 47014 has published the following parts.

- Part 1: Data Link Layer Service Definition;
- Part 2: Data Link Layer Protocol Specifications;
- Part 3: Application Layer Service Definition;
- Part 4: Application Layer Protocol Specifications.

This document is equivalent to IEC 61158-5-2:2023 "Industrial communication networks - Fieldbus specification - Part 5-2.Application layer services".

Type 2 elements.

The following minimal editorial changes have been made to this document.

---To align with existing standards, the standard name has been changed to "Industrial Communication Network Fieldbus Specification Type 2 Element.

EtherNet/IP, ControlNet and DeviceNet Specifications Part 3: Application Layer Service Definitions.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Industrial Process Measurement, Control and Automation (SAC/TC124).

Introduction

This document aims to facilitate the interconnection of components in automation systems. It conforms to the three-layer fieldbus reference model described in IEC 61158-1.

Other criteria in the set of meanings are relevant.

Application services are provided by application protocols that utilize data links or services provided by adjacent lower layers. This document defines the field.

Application service features that bus applications and/or system management may utilize.

Throughout the fieldbus standards set, the term "service" refers to the abstract capabilities that one layer of the OSI basic reference model provides to the layer above it.

Therefore, the application layer service defined in this document is a conceptual architectural service, independent of the management and implementation parts.

GB/T 47014 is proposed to consist of four parts.

---Part 1: Data Link Layer Service Definition. The purpose is to define conceptual data link layer services applicable to time-strict communication.

Its characteristics.

---Part 2: Data Link Layer Protocol Specification. The aim is to provide a set of communication rules that are used by peer data link entities in communication...

The message is represented by the program to be executed.

---Part 3: Application Layer Service Definitions. The purpose is to define the application services that fieldbus applications and/or system management may utilize.

feature.

---Part 4: Application Layer Protocol Specifications. The aim is to provide a set of communication rules, which are enforced by peer application entities during communication.

It is represented by a line of code.

Industrial Communication Network Fieldbus Specification Type 2 Element.

EtherNet/IP, ControlNet, and DeviceNet Specifications Part 3: Application Layer Service Definition

1.1 Overview

The Fieldbus Application Layer (FAL) provides user programs with a method to access the fieldbus communication environment. In this respect, the FAL can...

It is considered as a "window between corresponding applications".

This document provides basic time constraints and...

Non-time-strict message communication common elements. The term "time-strict" is used to indicate the existence of a time window, within which...

Within the specified time window, one or more prescribed actions must be completed with a defined level of determinism. Failure to complete the prescribed actions within the specified time window will result in...

The application requesting this action risks failure, which could endanger equipment,

factories, or even personal safety.

This document defines the Type 2 Fieldbus application layer externally visible services in an abstract form as follows.

- a) An abstract model used to define application resources (objects) that users can manipulate using FAL services;
- b) The actions and events of the service primitive;
- c) The parameters associated with each primitive action and event, and the format they use;
- d) The interrelationships between these actions and events and their effective sequence.

This document aims to define the services to be provided to.

- a) FAL users located at the boundary between the user in the fieldbus reference model and the application layer;
- b) System management, which is located at the intersection of the application layer and system management in the fieldbus reference model.

This document specifies the structure and services of the Type 2 fieldbus application layer, consistent with the OSI Basic Reference Model GB/T 9387.1 (IDT).

It conforms to ISO/IEC 7498-1 and OSI application layer architecture GB/T 17176 (IDT ISO/IEC 9545).

FAL services and protocols are provided by FAL application entities (AEs) included in the application process. FALAEs consist of a set of object-oriented applications.

It consists of a Service Element (ASE) and a Layer Management Entity (LME) that manages the AE. The ASE provides communication services to operate a set of related elements.

Application Process Object (APO) classes. One of them, FALASE, is the management ASE, which provides a set of common methods for managing FAL class instances.

Serve.

From an application perspective, although these services specify how requests and responses are sent and transmitted, they do not specify how requests are sent.

Applications and responses handle this type of service. That is, the specific behavior of the application is not specified; only that it can send/receive.

Which requests and responses. This provides FAL users with greater flexibility to standardize the behavior of such objects. In addition to these services, this document also...

Several support services are defined to provide access to the FAL and to control certain