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

GB/T 29910.3-2013

**Industrial communication networks -- Fieldbus specifications --
Type 20 HART specification -- Part 3: Application layer service
definition**

工业通信网络 现场总线规范 类型20：HART规范 第3部分：应用层服务定义

(English Translation)

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5.1 Overview

Foreword

GB/T 29910 "Industrial communication networks - Fieldbus specifications - Type 20. HART specification" is divided into the following six sections.

--- Part 1. HART wired network physical layer service definition and protocol specification;

Part --- Article 2. HART wired network data link layer service definition and protocol specification;

--- Part 3. Application layer service definition;

--- Part 4. Application layer protocol specification;

Part --- Article 5. WirelessHART wireless communication network and communication profile;

--- Part 6. Application layer protocol specification definitions and additional services.

This section GB/T Part of 329,910.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This section identical with IEC 61158-5-20:2010 "Industrial communication networks - Fieldbus specifications - Part 5-20. Application layer service Defined Type 20 elements "(in English).

Consistency correspondence between this part of international documents and normative references of our files are as follows.

--- GB/T 9387.1-1998 Information technology - Open Systems Interconnection - Basic Reference Model - Part 1. Basic model (ISO/IEC 7498-1:1994, IDT)

--- GB/T 15273.1-1994 Information processing bit single-byte coded graphic character sets - Part 1. Latin alphabet a (ISO/IEC 8859-1. 1987, IDT)

--- GB/T 15695-2008 Information technology - Open Systems Interconnection - Presentation service definition (ISO/IEC 8822:1994, IDT)

--- GB/T 16262.1-2006 Information technology - Open Systems Interconnection - Abstract Syntax Notation One (ASN.1) - Part 1. group the notation specification (ISO/IEC 8824-1:2002, IDT)

--- GB/T 17176-1997 Information technology - OSI Application Layer Structure (ISO/IEC 9545:1994, IDT)

--- GB/T 17967-2000 Information technology - Open Systems Interconnection - Basic Reference Model OSI service definition conventions (ISO/IEC 10731:1994, IDT) Technical content and composition and structure of this part of IEC 61158-5-20:2010 "Industrial communication networks - Fieldbus specifications - Part 5-20 . Application layer service definition - Type 20 elements "(in English) is consistent only in Chapter 2 normative references and made the following adjustments supplement.

--- The reference GB/T 29910.4-2013 adjusted to Chapter 2, as referred to in 5.1 and other provisions;

--- The reference IEC/T R61158-1 adjusted to Chapter 2, as referred to in 3.5 and other provisions;

International Standard --- appear in this section is not converted to equivalent national standards with international standards remain number.

This part is proposed by China Machinery Industry Federation.

This part of the measurement and control of Standardization Technical Committee (SAC/TC124) is administered by the National industrial processes.

This section is drafted. Machinery Industrial Instrumentation Technology and Economy

Institute, HART Communication Foundation, Chinese Academy of Sciences since Automation Research Institute, Shanghai Automation Instrumentation Co., Southwest University, Shanghai Institute of Industrial Automation Instrumentation, Systems Engineering Beijing and Belgium Cheng Co., Ltd., Beijing Science and Technology Co., Austin, Fujian on the Run Precision Instrument Co., Ltd., China Instrument Industry Association, Shanghai Han was heavenly networking Technology Co., Ltd., Chongqing Institute of Industrial Automation Instrumentation, double Group (Deyang) Heavy Equipment Co., Ltd.

1.1 Overview

Fieldbus Application Layer (FAL) program provides a means for users to access the fieldbus communication environment. In this regard, it may be FAL as "a window between the corresponding application." GB/T 29910 is divided into Part HART fieldbus specific automation environment, the basic message communication between applications it provides a common feature. These basic packet communication includes "strict timing requirements (time-critical)" communication and "non-time-critical (Non-time-critical)" communication. The term "time-critical" indicates that there is a time window within this time window, has demanded an Level definition of certainty required to complete one or more specified actions. Within a predetermined time window is not completed action will produce this request the risk of failure of the application of these actions, and even cause accompanying instruments, equipment and possible physical danger.

This section in an abstract manner the following aspects define the externally visible service HART fieldbus application layer provides.

- a) A method for defining an application resource (object) of the abstract model. The user can operate the application resources by using the FAL service (Object);
- b) service primitive actions and events;
- c) the parameters associated with each primitive action and event, as well as constituting the way these parameters;

The relationship between these actions and events d) its effective sequence.

This is part of the following user-defined services.

- a) FAL user to user and application layer boundary fieldbus reference model to provide services;
- b) to the system management and system management application layer boundary Fieldbus reference model to provide services.

This section provides the IEC 61158 Type 20 fieldbus application layer structures and services with OSI Basic Reference Model (ISO/IEC 7498-1) and the OSI Application Layer Structure (ISO/IEC 9545) is consistent.

FAL services and protocols provided by the application process is included in the FAL application entity (AE). FALAE consists of a set of object-oriented Application Service Element (ASE) and AE management layer management entity (LME) of the composition. ASE provides communication services used to operate a set of Related application process objects (APO) class. FALASE the management of FAL ASE instance of a class management to provide a public service Service set.

Although from the application point of view, the provisions of these services and how to place a transfer request and response, but does not specify the request and shall respond How to deal with these requests and responses. In other words, it does not provide for the application of aspects of behavioral characteristics, but only specifies the application which can be transmitted which received the request and response. Thus, in a standardized behavioral characteristics of these objects, the FAL gives the user greater flexibility. apart from to these services, this section also defines a number of support services to provide access to the FAL to control certain aspects of its operations.

1.2 Specification

The primary objective of this section is to provide suitable for time-critical communication conceptual application layer services features, as OSI basic reference Complementary model to guide the development of time-critical application-layer protocol for communication.

The second objective of this section is to provide existing industrial communication protocols migration path. It is this goal leads to different types of IEC 61158 Diversity of type of service.

This part can be used as the basis of a formal application interface. However, this is not a formal program interface. Any such interface