

ICS 25.040

CCS N 10



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

GB/Z 37085-2018

**Industrial communication network -- Profiles -- Part 3-8:
Functional safety communication profile of CC -- Link family**

Issued on: December 28, 2018

Implemented on: July 1, 2019

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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Foreword

This guidance technical document was drafted in accordance with the rules given in GB/T 1.1-2009.

This guidance document uses the translation method equivalent to IEC 61784-3-8.2016 "Industrial Communication Network Profiles Part 3-8.

Functional Safety Fieldbus for Additional Specifications for CPF8.

The documents of our country that have a consistent correspondence with the international documents that are normatively cited in this guidance document are as follows.

--- GB 5226.1-2008 Mechanical and electrical safety machinery and electrical equipment - Part 1. General technical conditions (IEC 60204-1.

2000, IDT)

---GB/T 15629.3-2014 Information technology standard system communication and information exchange LAN and MAN specific

Requirements Part 3. Carrier sensing multiple access with collision detection (CSMA/CD) access method and physical layer specification

(IEEE802.3..2000, IDT)

--- GB/T 16657.2-2008 Industrial Communication Network Fieldbus Specification Part 2. Physical Layer Specification and Service Definition

(IEC 61158-2.2007, IDT)

---GB/T 20438 (all parts) Functional safety of electrical/electronic/programmable control electronic safety related systems [IEC 61508

(all parts)]

---GB/T 21109 (all parts) Functional safety of safety instrumented systems in the process industry [IEC 61511 (all parts)]

---GB 28526-2012 Functional safety of electrical, electronic and programmable electronic control systems related to mechanical electrical safety and safety

(IEC 62061.2005, IDT)

---GB/T 33537.1-2017 Industrial Communication Network Fieldbus Specification Type 23. CC-LinkIE Specification Part 1

Points. Application Layer Service Definition (IEC 61158-5-23..2014, IDT)

---GB/T 33537.2-2017 Industrial Communication Network Fieldbus Specification Type 23. CC-LinkIE Specification Part 2

Points. Application Layer Protocol Specification (IEC 61158-6-23..2014, IDT)

---GB/T 34040-2017 Industrial Communication Network Functional Safety Fieldbus Profile General Rules and Profile Definition

(IEC 61784-3.2016, IDT)

This guidance technical document has been edited as follows.

--- Modified the standard name.

This guidance technical document was proposed by the China Machinery Industry Federation.

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

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Institute Co., Ltd., Southwest University, China Automation Society Integrated Automation Technology and Professional Committee.

Introduction

The IEC 61158 fieldbus standard and its companion standards IEC 61784-1 and IEC 61784-2 define a set of communication protocols.

Implement distributed control of automated applications. Fieldbus technology is now

generally accepted and proven to be viable. Therefore, many fieldbus technologies

The technology continues to improve, covering areas that have not been standardized, such as real-time, functional safety-related and information security-related applications.

This guidance technical document describes the principles of functional safety communication according to the IEC 61508 series of standards, and the specification is based on

Communication communication profiles and protocol layers of the IEC 61784-1, IEC 61784-2 and IEC 61158 series of standards (management and pairing)

Should be agreed upon), but does not include electrical safety and intrinsic safety aspects.

Figure 1 shows the relationship between this guidance document and the relevant safety and fieldbus standards in the mechanical environment.

Note. 6.7.6.4 (high complexity) and 6.7.8.1.6 (low complexity) in IEC 62061 specify the relationship between PL (category) and SIL.

Figure 1 Relationship between IEC 61784-3 and other standards (mechanical)

Figure 2 shows the relationship between this guidance document and the relevant safety and fieldbus standards in the process environment.

a For the specified electromagnetic environment, otherwise see IEC 61326-3-1.

Figure 2 Relationship between IEC 61784-3 and other standards (processes)

The secure communication layer implemented according to the IEC 61508 series of standards as part of a safety-related system for safety-related systems

The transmission of messages (information) between two or more participants on the fieldbus provides the necessary credibility, or a fieldbus error or invalidation

The security behavior in the piece provides sufficient credibility.

The secure communication layer specified in this guidance document allows fieldbus to be used to require functional safety to achieve a safety integrity level

For the application of (SIL), the SIL rating is specified by its corresponding functional safety communication profile.

The final SIL statement for a system depends on the implementation of the functional safety communication profile selected within the system - in standard equipment

The implemented functional safety communication profile is not sufficient to prove that the device is a security device.

This guidance document describes.

--- Implement the basic principles of the IEC 61508 series of standards for safety-related data communication requirements, including possible transmission failures, remediation measures

Considerations that affect data integrity;

--- Functional safety communication profiles for multiple communication profiles in IEC 61784-1 and IEC 61784-2, including the IEC 61158 series

The security layer extension of the communication services and protocols part of the standard.

Industrial communication network profile

Part 3-8. CC-Link Series Features

Secure communication profile

1 Scope

This guidance document specifies IEC 61784-1, IEC 61784-2 and IEC 61158 Type 18 and Type 23

CPF8's secure communication layer (services and protocols) and identifies the functional safety communication principles and guidelines defined in IEC 61784-3

The secure communication layer in the technical documentation is relevant.

Note 1. Does not include electrical safety and intrinsic safety aspects. Electrical safety involves dangers such as electric shock. Intrinsic safety involves potentially explosive environments

Danger.

This guidance document defines the transmission of security-related messages between participants in a distributed network using fieldbus technology.

Mechanism that meets the functional safety requirements of the IEC 61508 series of standards. These mechanisms can be used in a variety of industrial applications, such as process control

Manufacturing, manufacturing automation and machinery.

This guidance document provides guidance to developers and evaluators of equipment and systems that follow this guidance document.

Note 2. The final SIL statement of a system depends on the implementation of the functional safety communication profile selected in the system - in accordance with this guide in standard equipment