

ICS 25.040.40; 35.240.50
CCS N 18



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

GB/T 15969.6-2015

Programmable controllers -- Part 6: Functional safety

可编程序控制器 第6部分：功能安全

(English Translation)

Issued on: December 10, 2015

Implemented on: July 1, 2016

Issued by: Standardization Administration of China

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Foreword

GB/T 15969 "Programmable Controller" contains the following sections.

--- Part 1. General information;

--- Part 2. Equipment requirements and tests;

--- Part 3. Programming languages;

--- Part 4. user guidelines;

--- Part 5. Communications;

--- Part 6. Functional safety;

--- Part 7. Fuzzy control programming;

--- Part 8. Programming language application and implementation guidance.

This section GB/T 15969 Part 6.

This section drafted in accordance with the rules of GB/T 1.1-2009 and GB/T 20000.2-2009 given.

This section uses the translation method is equivalent to using IEC 61131-6:2012 "Programmable controllers - Part 6. Functional safety." for ease of use, this section made the following editorial changes.

--- Remove the preface international standards, according to GB/T 1.1-2009 re-write the foreword to this section;

--- Body, who appears "IEC 61131-6" were changed to place this section;

--- Within the full range of punctuation column items to regulate;

--- In order to keep with the IEC 61131-6:2012 conformance, body, reservations are not dated references.

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

--- GB/T 17626.2-2006 Electromagnetic compatibility - Testing and measurement techniques - Electrostatic discharge immunity test (IEC 61000-4-2.

2001, IDT)

Functional safety - Part 1 --- GB/T 20438.1-2006 electrical/electronic/programmable electronic safety-related systems. generally Seek (IEC 61508-1:1998, IDT)

--- Functional safety GB/T 20438.2-2006 electrical/electronic/programmable electronic safety-related systems - Part 2. Electrical /Requirements for electronic/programmable electronic safety-related systems (IEC 61508-2:2000, IDT) Functional safety --- GB/T 20438.3-2006 electrical/electronic/programmable electronic safety-related systems - Part 3. Software To Seek (IEC 61508-3:1998, IDT)

--- Functional safety GB/T 20438.6-2006 electrical/electronic/programmable electronic safety-related systems - Part 6.

GB/T 20438.2 and GB/T 20438.3 application guide (IEC 61508-6:2000, IDT) Please note that some of the content of this document may involve patents. Release mechanism of the present document does not assume responsibility for the identification of these patents.

This part is proposed by China Machinery Industry Federation.

This part of the country's industrial process control and automation Standardization Technical Committee (SAC/TC124) centralized measurement.

This section is drafted. Machinery Industrial Instrumentation Technology and Economy Institute, Beijing Institute of Machinery Industry Automation, Zhejiang University, Zhejiang Control Technology Group Co., Ltd., when Beijing and advantage systems engineering Co.,

Rockwell Automation (China) Co., Ltd., Beijing State Power Zhishen Control Technology Co., Ltd., China Academy of Railway Sciences, Chongqing Sichuan Instrument Automation Co., Ltd., Jiang Su Tianfu products and services have Limited Beijing Branch, the CAS Shenyang Institute of Automation, Shanghai Automation Instrumentation Co., Ltd. and Southwest University.

Introduction

This section GB/T 15969 Part 6, should be combined with the rest for the programmable logic controller and related peripheral devices read.

Function as a safety programmable logic controller (FS-PLC) product standards, this section may be considered covered by the programmable controller and related peripheral devices.

If you can not meet the requirements of Part 4 of this chapter, you can not declare compliance with GB/T Part of 615,969.

GB/T 15969 Part 1 defines a generic term. More specific terms are defined in each section.

For the IEC 61508-1:2010, consistent with 1.1, this section contains the IEC 61508-1, IEC 61508-2 and IEC 61508-3 with programmable controllers and their associated peripherals product-specific requirements related to.

IEC 61508 is based on the structure of this part of the principle. However, because some aspects are not directly linked, and therefore require different treatments.

To some extent, this is due to the need to deal with hardware, software, firmware, etc. in a separate document.

As part of the framework of the IEC 61508-1:2010 Fig. 2, there is renumbered as 1, and it has been adjusted to show FS-PLC for how the overall E/E/PE safety-related system security lifecycle. Although Figure 1 includes a sensor block 10, the logical sub and the final element of the system (e.g., actuators), but from the perspective of IEC 61508-1, herein incorporated by reference to FIG. 3 projecting FS-PLC.

Likewise, from the perspective of this section, the implementation phase 1 block 10 only reflects the logic subsystem.

Note 1: For clarity, function and safety verification, security management functions and activities related to the functional safety assessment is not shown in the drawings, but these are the overall the, E/E/PE system and the various stages of the life cycle of software security.

Within the stage represented by block 11 is not in the scope of this standard. Note 2.

Note 3: IEC 61508-2 and IEC 61508-3 relates to block 10 (to achieve), but also relates to the relevant part of block 13, block 14 and programmable electronic box 15 Aspects (hardware and software).

Note 4: See IEC 61508-1 Table 1 describes the objectives and scope of the various stages of each block represents.

Note 5: The overall operation, maintenance, repair modifications, and decommissioning or disposal of the technical requirements needed to be defined as E/E/PE safety-related systems and components and metadata Piece Supply section supplied.

1 Each stage, overall E/E/PE safety-related systems security lifecycle FS-PLC

This section includes the range of FS-PLC Safety lifecycle management, functional safety requirements allocation and development plans, with a focus on the whole the implementation phase of the safety lifecycle (block 10). This section assumes FS-PLC as a logic subsystem overall E/E/PE system.

FIGS. 1 (block 10) comprising.

- Assign various security features FS-PLC to the FS-PLC hardware, software or firmware, or any combination to go;
- FS-PLC hardware structure;
- FS-PLC level verification and validation;
- FS-PLC modification requirements;
- Operation and maintenance information FS-PLC used by the user;
- FS-PLC manufacturers to provide information to the user.

Programmable controllers - Part 6. Functional safety

1 Scope

This section GB/T 15969 requirements for GB/T 15969.1 defined programmable logic controller (PLC) and their associated peripherals Equipment requirements, and its purpose is logical subsystems for electrical/electronic/programmable electronic (E/E/PE) safety-related systems. Subject to this section Programmable logic controller and related peripheral equipment requirements considered to be suitable for E/E/PE safety-related systems, known as functional safety can Programmable logic controller (FS-PLC). FS-PLC typically hardware (HW)/software (SW) subsystem. FS-PLC may also contain software Components, such as pre-defined function blocks.

E/E/PE safety-related systems typically comprise sensors, actuators, software, and logical subsystems. This part of the IEC 61508 standard to Product-specific implementation requirements, compliance with this section to conform to IEC 61508 with all applicable requirements for the FS-PLC. IEC 61508 standard Registration system is standard, and is divided into Part principles IEC 61508 standard applications in the FS-PLC provides a