

ICS 29.020
CCS K 04



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

GB/T 16679-2009

**Industrial systems, installations and equipment and industrial
products - Designation of signals - Part 1: Basic rules
(English Translation)**

Issued on: August 23, 2024

Implemented on: March 1, 2025

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

Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative references	
3 Terms and Definitions	
4 Basic Rules	
4.1 General rules for signal transmission and signal naming	
4.2 Signal Classification	
4.3 Signal Name Field	
5 Signal code	
5.1 Structure of signal codes	
5.2 Recommended Characters	
5.3 Signal code composition	
6 Signal identification in signal connection network	
6.1 General principles	
6.2 Predefined signal names	
6.3 Signal Grouping	
7 Signal recognition of data exchange interface	
7.1 General Rules	
7.2 Interfaces between circuits and programmable devices (I/O)	
7.3 Logical Communication Interface	
8 Signal indication	
8.1 Representation and presentation of signal codes	
8.2 Human Machine Interface (HMI)	
8.3 Representation in files	
8.4 Display of signal metadata	
Appendix A (normative) Letter codes for signal designations	
A.1 Alphabetic code of variables	
A.2 Table of letter codes used as modifiers	
A.3 Identification of certain specific conductors	
Appendix B (Informative) Binary Logic Representation	
B.1 General principles	

B.2 Negative signal

Appendix C (informative) Signal list including examples of signal connection identifiers

C.1 Representation of voltage measurement signals --- Class M

C.2 Representation of control signals --- Class C

Appendix D (Informative) Basic communication requirements during the process

D.1 Process model

D.2 Signal connection and signal display medium

D.3 Applicability of signal codes

Appendix E (Informative) Reconstruction of Communication Information

E.1 General principles

E.2 Data Objects

Appendix F (Informative) Data Element Type Definition

F.1 General principles

F.2 Definition and classification of sources of DET

Reference

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is part 1 of GB/T 16679 "Industrial systems, devices and equipment and industrial product signal codes".

The following sections have been published.

--- Part 1: Basic rules.

This document replaces GB/T 16679-2009 "Industrial systems, devices and equipment and industrial product signal codes" and GB/T 16679-Compared with 2009, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

--- Added terms. information object, data object, signal name, signal connection, signal connection network, signal connection identifier, signal Transmission media, domains, signal classification codes, signal connection characteristics; (see Chapter 3)

--- Deleted the terms. signal connection line, signal connection chain, signal type, signal variable, data point, data item, form (see 2009 3 of the 2011 edition).

--- Changed the basic rules (see Chapter 4, Chapter 4 of the 2009 edition);

- Changed the signal code (see Chapter 5, Chapter 5 of the 2009 edition);
- Changed the signal identification in the signal connection network (see Chapter 6, Chapter 6 of the 2009 edition);
- Added signal identification of data exchange interface (see Chapter 7);
- Deleted the application (see Chapter 8 of the 2009 edition);
- Deleted the consistency classification (see Chapter 9 of the 2009 edition);
- Added letter codes for signal codes (see Appendix A).

This document is equivalent to IEC 61175-1:2015 "Industrial systems, devices and equipment and industrial products signal code Part 1.

Basic Rules.

Introduction

The signal code is closely associated with the signal throughout its life cycle, which starts from the design phase and ends when the signal is no longer used.

until.

GB/T 16679 currently consists of one part.

- Part 1: Basic rules. Aims to establish rules and requirements for signal codes.

When the device reconstruction causes the signal transmission medium to change, in order to keep the semantics of the signal identification unchanged, the signal identification will not be changed.

The signal represents information. For the purpose of communication, the information is in the form of data. The information is more or less complex. In simple applications, in this example, the information can be represented using a single Boolean variable without the need for an internal structure. In more complex application cases, such as when computers communicate, information can be transmitted by encapsulating the internal structure in complex objects using appropriate protocols.

Common technologies and protocols are implemented in different ways. Figure 1 shows an example related to terminology.

Figure 1 Examples of terms related to

The guidelines covered in this document are related to other standards such as IEC 81346-1, IEC 81346-2, IEC 61666 and IEC 81714-3.

IEC TS62771 provides the intrinsic relationship of the information model.

Industrial systems, devices and equipment, and industrial products Signal codes Part 1:

Basic rules

1 Scope

This document provides the rules for the code formation of signal identification and signal connection, including the code for power supply.

This document applies to all types of signals in industrial systems, devices and equipment and industrial products. It does not involve the information aspects of the signal.

Physical realization.

The general principles of information presentation on the human-machine interface are outside the scope of this document. This document does not apply to wiring, terminals, bushings, and other hardware connections.

's logo.

Note: For wiring identification, refer to IEC 62491.

This document is intended primarily for use by technical committees preparing standards based on the rules for preparing standards in IEC Guide 108.

It is one of the responsibilities of technical committees to refer to horizontal standards when preparing their publications, unless it is expressly stated in the publication that they are not applicable or that this horizontal standard is not applicable.

The content of the standard does not apply.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

ISO 80000-9 Quantities and units - Part 9: Physical chemistry and molecular physics technology-Part 1: Rules) Note. GB/T 6988.1-2008 Preparation of electrical technical documents Part 1: Rules (IEC 61082-1:2006, IDT) based processing) IEC 81346-1 Structural principles and reference codes for industrial systems, devices and equipment and industrial products Part 1: Basic rules Note. GB/T 5094.1-2018 Industrial systems, devices and equipment and industrial product structure principles and reference codes Part 1: Basic rules (IEC 81346-1:2009, IDT)