

ICS 35.100.60
CCS L 79



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

GB/T 16263.1-2025

Replacing GB/T 16263.1-2006

**Information technology - ASN.1 encoding rules - Part 1:
Specification of Basic Encoding Rules(BER), Canonical
Encoding Rules(CER) and Distinguished Encoding Rules(DER)
(English Translation)**

Issued on: April 25, 2025

Implemented on: November 1, 2025

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

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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 16263 Information Technology ASN.1 Coding Rules. GB/T 16263 has published the following part.

- Part 1: Specifications of Basic Encoding Rules (BER), Regular Encoding Rules (CER) and Untypical Encoding Rules (DER);
- Part 2: Specification of Restricted Encoding Rules (PER);
- Part 4: XML Encoding Rules (XER);
- Part 5: Mapping of W3C XML Schema Definitions to ASN.1.

This document replaces GB/T 16263.1-2006 "Information Technology ASN.1 Encoding Rules Part 1: Basic Encoding Rules (BER), Compared with GB/T 16263.1-2006, the Standard for Regular Encoding Rules (CER) and Untypical Encoding Rules (DER) has made structural adjustments and in addition to logical changes, the main technical changes are as follows.

- "UTF8" was added to the abbreviations and "ULA" was deleted (see Chapter 4, Chapter 4 of the 2006 edition);
- Added relevant provisions on coding structure (see 8.1.1.5);
- Changed the description of real value 0 encoding (see 8.5.2, 8.5.3 and 8.5.9, 8.5.2 and 8.5.8 of the 2006 edition);
- Added relevant provisions for "encoding of prefixed type values" (see 8.14.1);
- Added "Encoding of OID international resource identifier values", "Encoding of relative OID international resource identifier values", "TIME class relevant provisions of "Encoding of Type and Useful Time Type Values" (see 8.21, 8.22 and 8.26);
- Added the relevant provisions for converting "TIME type and useful time type values" to the standard format (see 11.9);
- Added "OID International Resource Identifier" to identify and describe basic encoding rules (see Chapter 12);

This document is equivalent to ISO/IEC 8825-1:2021 "Information technology ASN.1 encoding rules Part 1: Basic encoding rules (BER), Regular Encoding Rules (CER), and Degenerate Encoding Rules (DER) specifications.

The following minimal editorial changes were made to this document.

- Change the normative references to specific clauses in the text to date references;
- Delete the "Note" in the normative reference documents and quote the latest version of ISO/IEC 10646. The reference content does not involve technical changes;
- In Chapter 4, the abbreviation "ULA" which is not cited in the whole text is deleted;
- Unify the abbreviations "UTF-8" and "UTF8" throughout the text to the abbreviation "UTF8" defined in Chapter 4.

Introduction

GB/T 16262.1-2025, GB/T 16262.2-2025, GB/T 16262.3-2025 and GB/T 16262.4-2025 (Abstract Syntax Notation One or ASN.1) together specifies the notation for abstract syntax. This document defines the encoding of type values defined using ASN.1 notation.

The application of these encoding rules produces the transfer syntax for these values, and also applies to decoding.

This document defines three sets of encoding rules, namely basic encoding rules, regular encoding rules and atypical encoding rules.

In the code, the basic encoding rules give various choices for how the encoder transmitter encodes the data value, while the regular encoding rules and the atypical encoding rules. Then only one encoding is selected from those allowed by the basic encoding rules, excluding all options for the sender.

The set of restrictions that atypical encoding rules impose on basic encoding rules is different from each other.

Appendix A gives examples of applying basic coding rules.

Appendix B summarizes the assignment of Object Identifier and OID International Resource Identifier values generated in this document.

Appendix C gives examples of applying the basic encoding rules to encoded real numbers.

GB/T 16263 is planned to consist of 8 parts.

--- Part 1: Basic Encoding Rules (BER), Regular Encoding Rules (CER) and Untypical Encoding Rules (DER) specifications.

To specify a set of basic encoding rules.

--- Part 2: Specification of the compressed encoding rules (PER). The purpose is to specify a set of compressed encoding rules.

--- Part 3: Encoding Control Notation (ECN) Specification. The purpose is to standardize the ASN.1 Encoding Control Notation.

--- Part 4: XML Encoding Rules (XER). The purpose is to specify the Basic XML Encoding Rules (BASIC-XER), regular XML Encoding Rules Set (CXER) and Extended XML Encoding Rules Set (EXTENDED-XER).

--- Part 5: Mapping of W3C XML Schema Definitions to ASN.1. The purpose is to define the mapping from any XSD schema to ASN.1. There are two versions of the mapping mode.

--- Part 6: Registration and application of PER coded instructions. The purpose is to specify the PER coded instruction format, mechanism, registration agency Methods of operation,