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**Information security — Encryption  
algorithms —**

**Part 1:  
General**

*Sécurité de l'information — Algorithmes de chiffrement —  
Partie 1: Généralités*





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# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Symbols and abbreviated terms</b> .....	<b>5</b>
<b>5 Nature of encryption</b> .....	<b>5</b>
5.1 Purpose of encryption.....	5
5.2 Symmetric and asymmetric encryption systems.....	6
5.3 Key management.....	6
<b>6 Use and properties of encryption</b> .....	<b>6</b>
6.1 General.....	6
6.2 Asymmetric encryption systems.....	7
6.3 Block ciphers.....	7
6.3.1 General.....	7
6.3.2 Modes of operation.....	7
6.3.3 Message authentication codes (MACs).....	7
6.4 Stream ciphers.....	8
6.5 Identity-based encryption systems.....	8
6.6 Homomorphic encryption systems.....	8
<b>7 Object identifiers</b> .....	<b>8</b>
<b>Annex A (informative) Criteria for submission of encryption systems for possible inclusion in the ISO/IEC 18033 series</b> .....	<b>9</b>
<b>Annex B (informative) Criteria for the deletion of encryption systems from the ISO/IEC 18033 series</b> .....	<b>14</b>
<b>Annex C (informative) Attacks on encryption algorithms</b> .....	<b>15</b>
<b>Bibliography</b> .....	<b>18</b>

## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives) or [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs)).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html). In the IEC, see [www.iec.ch/understanding-standards](http://www.iec.ch/understanding-standards).

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 27, *Information security, cybersecurity and privacy protection*.

This third edition cancels and replaces the second edition (ISO/IEC 18033-1:2015), which has been technically revised. The main changes compared with the previous edition are as follows:

- [Clause 3](#) has been refined;
- criteria for submission of encryption systems have been refined for possible inclusion in the ISO/IEC 18033 series; and
- the use and security properties of encryption algorithms have been clarified.

A list of all parts in the ISO/IEC 18033 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html) and [www.iec.ch/national-committees](http://www.iec.ch/national-committees).

## Introduction

The ISO/IEC 18033 series specifies encryption systems for the purpose of data confidentiality. The inclusion of encryption systems in this document is intended to promote their use as reflecting the current state of the art in encryption systems.

The primary purpose of encryption systems is to protect the confidentiality of stored or transmitted data. An encryption algorithm is applied to data (often called plaintext) to yield encrypted data (or ciphertext). This process is known as encryption. The encryption algorithm should be designed so that the ciphertext yields no information about the plaintext except, perhaps, its length. Associated with every encryption algorithm is a corresponding decryption algorithm, which transforms ciphertext back into its original plaintext.

Encryption systems work in association with a key. In a symmetric encryption system, the same key is used in both the encryption and decryption algorithms. In an asymmetric encryption system, different but related keys are used for encryption and decryption. ISO/IEC 18033-2 and ISO/IEC 18033-5 focus on two different classes of asymmetric encryption systems, known as conventional asymmetric encryption systems (or just asymmetric encryption systems), and identity-based encryption systems. ISO/IEC 18033-3 and ISO/IEC 18033-4 focus on two different classes of symmetric encryption systems, known as block ciphers and stream ciphers. ISO/IEC 18033-6 focuses on a specific class of encryption systems called homomorphic.



# Information security — Encryption algorithms —

## Part 1: General

### 1 Scope

This document is general in nature and provides definitions that apply in subsequent parts of the ISO/IEC 18033 series.

It introduces the nature of encryption and describes certain general aspects of its use and properties.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 18033-2, *Information technology — Security techniques — Encryption algorithms — Part 2: Asymmetric ciphers*

ISO/IEC 18033-3, *Information technology — Security techniques — Encryption algorithms — Part 3: Block ciphers*

ISO/IEC 18033-4, *Information technology — Security techniques — Encryption algorithms — Part 4: Stream ciphers*

ISO/IEC 18033-5, *Information technology — Security techniques — Encryption algorithms — Part 5: Identity-based ciphers*

ISO/IEC 18033-6, *IT Security techniques — Encryption algorithms — Part 6: Homomorphic encryption*

ISO/IEC 18033-7, *Information technology — Security techniques — Encryption algorithms — Part 7: Tweakable block ciphers*