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

GB/T 45412.2-2025

**Optics and photonics - Specifications for binoculars,
monoculars and spotting scopes - Part 2: High performance
instruments**

光学和光子学 双筒望远镜、单筒望远镜和观测镜规范 第2部分：高性能仪器
(English Translation)

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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 2 of GB/T 45412 "Optical and photonics binoculars, telescopes and observation mirrors Specification".

GB/T 45412 has published the following parts.

--- Part 1: Common performance instruments;

--- Part 2: High performance instruments.

This document is modified to adopt ISO 14133-2:2016 "Optics and photonics - Binoculars, telescopes and spotting scopes - Part 2 Part. High Performance Instruments.

The technical differences between this document and ISO 14133-2:2016 and their reasons are as follows.

--- Changed the "Scope" content (see Chapter 1) to comply with the standards writing rules of my country;

--- The normative reference GB/T 44403 replaces ISO 14132-1 and ISO 14132-2 (see Chapter 3) to comply with the national standard Quasi-usage habits;

--- ISO 10109-4 (see Chapter 4) is replaced by the normative reference ISO 20711 to conform to the Chinese standard usage habits;

--- Changed the content of "Basic Requirements" (see Chapter 4) to conform to the usage habits of Chinese standards;

- The normative reference GB/T 45410.1 replaces ISO 14490-1 (see Chapter 4) to conform to the standard usage habits of my country;
- The normative reference GB/T 45410.2 replaces ISO 14490-2 (see Chapter 4) to conform to the standard usage habits of my country;
- The unit "m/km" (see Table 4) has been deleted to conform to the usage habits of Chinese standards.

The following editorial changes were made to this document.

- Added unit items in Table 1 and Table 2;
- The informative reference GB/T 45412.1 replaces ISO 14133-1.

Introduction

The telescope system is the core part of various telescopes and is widely used in astronomical observation, space remote sensing, geodesy, weapons and equipment, culture and education, etc.

Sports, culture, entertainment, tourism and other fields. With the advancement of science and technology and the development of social economy, the application scope of telescopes is expanding.

The industry has taken shape as the output of products has gradually increased.

With the rapid development of binoculars technology at home and abroad, binoculars are not only an observation instrument, but also a portable with its high-definition, versatility and high definition, it has become an indispensable tool for outdoor activities, sports events, astronomical observation and security monitoring.

Therefore, the relevant technical parameters of binoculars enable them to function normally in various applications, thus ensuring the production of binoculars.

Improve product design, quality and application, promote coordination among enterprises and improve production efficiency.

In view of the above reasons, according to the parameters and usage functions of binoculars, it is necessary to analyze the main indicators of binoculars.

Standardization and normalization.

GB/T 45412 Specification for binoculars, telescopes and telescopes for optics and photonics contains the terminology and it contains clauses such as definition, basic requirements and information to be provided to users, and specifies binoculars according to different parameters and various characteristics.

GB/T 45412 "Optical and photonic binoculars, telescopes and observation mirrors

Specification" is intended to be divided into two parts.

--- Part 1: Common performance instruments. The purpose is to specify the technical parameters of common performance binoculars, telescopes and observation mirrors.

Numbers and information.

--- Part 2: High-performance instruments. The purpose is to specify the technical parameters and information.

Optics and photonics Binoculars, telescopes Specification for inspection mirrors Part 2:
High performance instruments

1 Scope

This document specifies the basic requirements and information to be provided to users of high performance binoculars, spotting telescopes and spotting scopes.

This document applies to high performance binoculars, spotting scopes and spotting scopes.

This document does not apply to ordinary performance binoculars, spotting scopes and spotting scopes.

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.

GB/T 44403 Optics and photonics - General terminology for telescope systems and binoculars, telescopes, observation mirrors and collimators Telescope Terminology (GB/T 44403-2024, ISO 14132-1:2015, ISO 14132-2:2015, ISO 14132-3:2021, MOD) GB/T 45410.1 Optics and photonics Telescope system test methods Part 1: Basic characteristics (GB/T 45410.1-2025, ISO 14490-1:2005,MOD) GB/T 45410.2 Optics and photonics Telescope system test methods Part 2: Binoculars (GB/T 45410.2-2025, ISO 14490-2:2005,MOD) ISO 14490-7 Optics and photonics Telescope systems test methods Part 7: Limiting resolution test method ISO 20711 Optics and photonics-Environmental requirements Telescope system test requirements (Opticsandphotonics-Environ-

3 Terms and definitions

The terms and definitions defined in GB/T 44403 apply to this document.

4 Basic Requirements

According to the allowable deviation of optical characteristics (see Table 1) and the minimum requirements of optical characteristics (see Table 2), binoculars, monoculars and Basic requirements for observation mirrors.

Tolerance is the maximum permissible deviation between a measured value and the nominal value, where the nominal value is determined by the manufacturer or distributor.

All deviations and parameter values refer to the values measured on the optical axis.

The environmental requirements for binoculars, telescopes and spotting scopes should comply with ISO 20711.

Tables 1 and 2 specify the requirements for various characteristics, which should be in accordance with GB/T 45410.1, GB/T 45410.2 and ISO 14490-7.

Test method for detection.