



National Standard of the People's Republic of China

GB/T 32065.3—2015

Environmental test methods for oceanographic instruments — Part 3: Low-temperature storage test

(English Translation)

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Foreword

GB/T 32065 *Environmental test methods for oceanographic instruments* consists of the following 17 parts:

- Part 1: General
- Part 2: Low-temperature test
- Part 3: Low-temperature storage test
- Part 4: High-temperature test
- Part 5: High-temperature storage test
- Part 6: Steady damp-heat test
- Part 7: Cyclic damp-heat test
- Part 8: Temperature variation test
- Part 9: Mold growth test
- Part 10: Salt spray test
- Part 11: Shock test
- Part 12: Crash test
- Part 13: Inclining and swing test
- Part 14: Vibration test
- Part 15: Hydrostatic pressure test
- Part 16: Seawater corrosion test
- Part 17: Combined temperature, humidity, vibration test

This is Part 3 of GB/T 32065.

This part was drafted according to the rules of GB/T1.1-2009.

This part was proposed by the State Oceanic Administration.

This part was prepared by SAC/TC283 (National Technical Committee on Oceans of the Standardization Administration of China).

The drafting unit of this part: National Center of Ocean Standards and Metrology

The main drafters of this part: Liu Shidong, Zhang Yanpu, Yang Zheling, Sui Jun and Pang Yongchao

Environmental test methods for oceanographic instruments

Part 3: Low-temperature storage test

1 Scope

This part of GB/T 32065 specifies the test requirements, test procedures and relevant information pertaining to low-temperature storage tests for marine instruments.

This part is used to examine or determine the adaptability of marine instruments when stored under low-temperature environment conditions.

2 Normative References

This document references the following document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 32065.1-2015 Environmental test methods for oceanographic instruments - Part 1: General

3 Test Requirements

3.1 General requirements

The standard atmospheric conditions, test sample installation, test temperature stability, and test-interruption handling of low-temperature storage tests for marine instruments shall be performed according to the provisions given in Clauses 4.2, 6.1, 6.2 and 7 of GB/T 32065.1-2015.

3.2 Test equipment

3.2.1 The test equipment shall meet the provisions given in Clause 5 of GB/T 32065.1-2015.

3.2.2 In the test, the test sample shall be at the center of the test chamber. The minimum distance from any of its surfaces to the closest test chamber wall shall be greater than 15 cm, and the wind speed in the test chamber shall not exceed 1.7 m/s.

3.2.3 The test sample in the test chamber shall not be directly radiated by any heating or cooling element.

3.3 Test temperature

Unless otherwise specified, the temperature of the low-temperature storage test for marine instruments shall be selected from the following values:

- a) $(-40 \pm 3) ^\circ\text{C}$;
- b) $(-55 \pm 3) ^\circ\text{C}$;
- c) $(-65 \pm 3) ^\circ\text{C}$.

3.4 Duration

Unless otherwise specified, the duration of the low-temperature storage test for marine instruments shall be selected from the following:

- a) 8 h, applicable to general marine instruments; or
- b) 24 h, applicable to marine instruments with limit glass and other products.

Note: "Limit glass and other products" refers to glass, ceramics and glass products which are installed or limited at the specific position, those are commonly seen in optical and electronic systems.

4 Test Procedure

4.1 Pretreatment

Place the test sample under the standard atmospheric conditions until the temperature of the test sample is stable. Alternatively, perform the pretreatment according to the relevant specification (such as the product standard, test program or test contract, as described below).

4.2 Initial testing

Perform the appearance inspection, as well as electrical, mechanical and other performance testing of the test sample according to the provisions of the relevant specification, and record the testing data.

4.3 Condition test

4.3.1 The test sample shall be placed in the test chamber under the unpackaged and power-off states, and then the temperature of the test chamber shall be adjusted to the set value with temperature change rate of $(0.7 \sim 1.0) ^\circ\text{C}/\text{min}$.

4.3.2 After the test sample reaches temperature stability again, keep the time specified in Subclause 3.4.

4.3.3 When the test ends, the test sample shall be kept in the test chamber. The temperature of the test chamber shall be increased to the standard atmospheric temperature of the test with temperature change rate of $(0.7 \sim 1.0) ^\circ\text{C}/\text{min}$. The temperature shall be maintained until the test sample attains temperature stability.

4.4 Recovery

4.4.1 Unless otherwise specified, the recovery shall be performed according to the provisions of 6.3 in GB/T 32065.1—2015.

4.4.2 To remove water drops, air shall be blown for a short time at the room temperature, or another appropriate method shall be used.

4.5 Final testing

Perform the appearance inspection, and the electrical, mechanical and other performance testing of the test sample according to the provisions of the relevant specifications, and record the testing data.

5 Relevant Information

When the method specified in this part is used, the relevant specification should be given the following information:

- a) Pretreatment;
- b) Initial testing;
- c) State of the test sample during the condition test;
- d) Test temperature and duration;
- e) Recovery;
- f) Final testing; and
- g) Any change in the test procedure agreed upon by the supply and demand parties.

Annex A
(Informative)
Record Form of Testing Data of Test Samples

The record form of testing data of test samples is used to record the relevant data for initial and final testing. For details, see Table A.1.

Table A.1 Record Form of Testing Data

Testing sample information				
Test item		Sample name		
Sample model		Sample no.		
Sample characteristic description				
Main equipment used for testing				
Name	Measurement range	Accuracy class or maximum permissible error	Certificate no.	Valid until
Testing situation				
Initial testing				
Final testing				
