ISO 10360-10:2021 (E)

Geometrical product specifications (GPS) — Acceptance and reverification tests for coordinate measuring systems (CMS) — Part 10: Laser trackers

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Symbols

5 Rated operating conditions

5.1 Environmental conditions
5.2 Operating conditions

6 Acceptance tests and reverification tests

6.1 General
6.2 Probing size and form errors
6.2.1 Principle
6.2.2 Reference artefact
6.2.3 Procedure
6.2.4 Derivation of test results
6.2.4.1 Size errors
6.2.4.2 Form errors
6.3 Location errors (two-face tests)
6.3.1 Principle
6.3.2 Reference artefact
6.3.3 Procedure
6.3.4 Derivation of test results
6.4 Length errors
6.4.1 General
6.4.2 Principle
6.4.3 Reference artefacts
6.4.4 Procedure
6.4.4.1 Required test length positions
6.4.4.2 Testing of laser trackers with both IFM mode and ADM mode specified
6.4.5 Derivation of test results

7 Conformity with specification

7.1 Acceptance tests
7.2 Reverification tests

8 Applications

8.1 Acceptance test
8.2 Reverification test
8.3 Interim check

9 Alternative unformatted presentation of symbols

Annex A (informative) Forms

A.1 Form 1 — General specifications and rated conditions
A.2 Form 2 — Manufacturer’s performance specifications

Annex B (normative) Calibrated test lengths

- **B.1 General**
- **B.2 Material measures**
- **B.3 Scale bars**
- **B.4 Rigid nests**
- **B.5 Rail or carriage system**
- **B.6 Averaged and bi-directional lengths**

Annex C (normative) Thermal compensation of workpieces

Annex D (informative) Specification of MPEs

- **D.1 General**
- **D.2 Subsystem contributions**
- **D.3 Development of generic formula**
- **D.4 Note on distance (range) testing**
- **D.5 Note on two-face measurement**

Annex E (informative) Interim testing

- **E.1 General**
- **E.2 Environmental considerations**
- **E.3 Frequency of interim testing**
- **E.4 A best practice guideline**
- **E.5 Interim test procedure**
- **E.5.1 Interim test for geometry errors**
- **E.5.1.1 Introduction**
- **E.5.1.2 Procedure**
- **E.5.1.3 Alternative ways of realizing the interim test for geometry errors**
- **E.5.2 Interim test for inclinometer errors (orient to gravity tests)**
- **E.5.2.1 Introduction**
- **E.5.2.2 Set-up**
- **E.5.2.3 Inclinometer test based on laser tracker tilt**
- **E.5.2.4 Inclinometer test based on laser tracker translation**
- **E.5.2.5 Additional notes**

Annex F (normative) Testing of a stylus and retroreflector combination (SRC)

- **F.1 General**
- **F.2 Probing errors**
- **F.3 Orientation-dependent errors**
- **F.3.1 General**
- **F.3.2 Measuring equipment**
- **F.3.3 Procedure**
- **F.3.4 Derivation of test results**
- **F.4 Registration errors**
- **F.5 Symbols pertaining to this annex**

Annex G (normative) Testing of an optical distance sensor and retroreflector combination (ODR)

- **G.1 General**
- **G.2 Probing errors**
- **G.3 Registration errors**
- **G.4 Flat form measurement**
- **G.5 Symbols pertaining to this annex**

Annex H (informative) Relation to the GPS matrix model

- **H.1 General**
- **H.2 Information about this document and its use**
- **H.3 Position in the GPS matrix model**
- **H.4 Related International Standards**

Page count: 46