

DIN EN ISO 14978:2019-06 (E)

Geometrical product specifications (GPS) - General concepts and requirements for GPS measuring equipment (ISO 14978:2018)

Contents	Page
European foreword.....	4
Foreword	5
Introduction	6
1 Scope.....	7
2 Normative references.....	7
3 Terms and definitions	7
3.1 ISO/IEC Guide 99:2007 terms.....	8
3.2 Synonym terms to ISO/IEC Guide 99:2007 terms.....	8
3.3 ISO/IEC Guide 98-4:2012 terms.....	9
3.4 ISO 14253-5:2015 terms.....	9
3.5 Terms related to GPS measuring equipment	9
4 Abbreviations	16
5 Design characteristics	16
5.1 General.....	16
5.1.1 Importance of design characteristics	16
5.1.2 Standards for measuring equipment.....	17
5.1.3 Measuring equipment — Commerce.....	17
5.1.4 Measuring equipment — Internal use in a company	17
5.2 Design characteristics for indicating measuring instruments	17
5.3 Design characteristics for material measures.....	18
6 Metrological characteristics.....	19
6.1 General.....	19
6.1.1 Importance of metrological characteristics	19
6.1.2 Standards for measuring equipment.....	19
6.1.3 Identification, definition and choice of metrological characteristics	19
6.1.4 Calibration and verification of measuring equipment.....	20
6.1.5 Calibration and verification methods.....	21
6.1.6 Measuring equipment — Commerce.....	23
6.1.7 Measuring equipment — Internal use in a company	23
6.2 Indicating measuring instruments	23
6.2.1 General.....	23
6.2.2 Scale interval — Resolution	24
6.2.3 Digital step.....	24
6.2.4 Error of indication	24
6.2.5 Temperature-related metrological characteristics.....	25
6.2.6 Characteristics related to measuring force	25
6.2.7 Geometry of contact element.....	25
6.2.8 Auxiliary equipment	25

6.3	Material measures	26
6.3.1	General	26
6.3.2	Scale interval — Resolution of reading	26
6.3.3	Form of feature characteristics	26
6.3.4	Orientation of feature characteristics	26
6.3.5	Temperature-related metrological characteristics	26
6.3.6	Geometrical stability	26
6.3.7	Other possible metrological characteristics	26
7	Specification and presentation of metrological characteristics	27
7.1	General	27
7.2	Specification of metrological characteristics	27
7.2.1	General	27
7.2.2	Constant value MPE function	27
7.2.3	Proportional value MPE function	28
7.2.4	Proportional and maximum value MPE function	29
7.3	Presentation of characteristic curves	30
7.3.1	General	30
7.3.2	Presentation of characteristic curves – Reference point	30
8	Calibration of metrological characteristics	32
8.1	Manufacturer and supplier of measuring equipment	32
8.2	User of measuring equipment	32
8.3	Measurement uncertainty	32
9	Marking	33
10	GPS standards for specific measuring equipment	33
Annex A (normative) General minimum requirements and guidance for clauses in GPS standards for specific measuring equipment		34
Annex B (informative) Data sheet for measuring equipment requirements		37
Annex C (normative) Common design characteristics		39
Annex D (informative) Test uncertainty		45
Annex E (informative) Relation to the GPS matrix model		47
Bibliography		49