ČESKÝ METROLOGICKÝ INSTITUT

Okružní 31, 638 00 Brno
legmet@cmi.cz
+420 545 555 414

P U B L I C D E C R E E

As the authority with substantive and territorial jurisdiction in the matter of laying down metrological and technical requirements for specified measuring instruments and stipulating test methods for type approval, verification and testing of specified measuring instruments pursuant to § 14(1) of Act No 505/1990, on metrology, as amended (hereinafter the 'Metrology Act'), and in accordance with the provisions of § 172 et seq. of Act No 500/2004, the Administrative Code (hereinafter the 'AC'), the Czech Metrology Institute (hereinafter the 'CMI') commenced ex officio proceedings on 1 July 2024 pursuant to § 46 AC, and, based on supporting documents, issues the following:

I.

DRAFT MEASURE OF A GENERAL NATURE

number: 0111-OOP-C101-26

laying down metrological and technical requirements for specified measuring instruments, including test methods for type approval, verification and testing of specified measuring instruments:

'multi-dimensional measuring instruments'

1 Definitions

For the purposes of this Measure of a General Nature, the terms and definitions pursuant to VIM and VIML[1] and the following apply:

1.1
multidimensional measuring instruments

measuring instruments used to determine the external dimensions (length, height and width) of the smallest rectangular parallelepiped enclosing the measured object, hereinafter 'measuring instruments'

1.1.1

automatic measuring instruments

measuring instruments performing measurements without operator intervention

1.1.2
semi-automatic measuring instruments

measuring instruments requiring operator intervention to perform the measurement, but determining the measurement results automatically

[1] TNI 01 0115 International Vocabulary of Metrology – Basic and General Concepts and Associated Terms (VIM) and International Vocabulary of Terms in Legal Metrology (VIML) are part of the technical harmonisation compendium 'Terminology in the Area of Metrology', which is publicly accessible at www.unmz.cz.

1.1.3
multi-interval measuring instruments

measuring instruments having one measuring range for each axis, which is divided into sub-ranges with different scale intervals, whereby the relevant measuring range is determined automatically depending on the dimension being measured

2 Metrological requirements

Measuring instruments are subject to metrological requirements laid down in special legislation[2], in particular:

2.1 Maximum permissible error (MPE)

The maximum permissible error is ±1.0*d*.

During subsequent verification, the measuring instruments are subject to the metrological requirements that were decisive for their placing on the market.

3 Technical requirements

Measuring instruments are subject to technical requirements laid down in special legislation[2].

During subsequent verification, the measuring instruments are subject to the technical requirements that were decisive for their placing on the market.

4 Measuring instrument markings

The marking of measuring instruments is subject to the requirements set out in special legislation[2].

During subsequent verification, the marking of measuring instruments is subject to the requirements that were decisive for their placing on the market.

5 Measuring instrument type approval

Measuring instruments are placed on the market with a conformity assessment in accordance with special legislation[2]. The provisions on type approval pursuant to § 24b of Act No 505/1990 on metrology do not apply.

6 Initial verification

Measuring instruments are placed on the market with a conformity assessment in accordance with special legislation[2]. The provisions on initial verification pursuant to § 24b of Act No 505/1990 on metrology do not apply.

7 Subsequent verification

During verification, the following actions and tests are performed:

a) visual inspection;

b) accuracy test;

---

[2] Government Regulation No 120/2016 laying down technical requirements for measuring instruments (hereinafter the 'Government Regulation'), which incorporates Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on measuring instruments (MID) into the Czech legal order

7.1 Visual inspection

The following are determined during the visual inspection:

- the measuring instrument submitted for verification conforms to the approved type;
- the measuring instrument is not mechanically damaged;
- the measuring instrument has the appropriate markings;
- the measuring area, if not part of the measuring instrument (e.g., if marked on the floor or other surface), is clearly marked around its entire perimeter.

Any measuring instrument that fails the visual inspection or the requirement for specification of the measuring area is excluded from further testing.

7.2 Test objects

Suitable test objects of various sizes and stable dimensions must be used for the test. The test objects must be opaque, rigid, with flat walls and clearly defined straight edges. Test objects may be rectangular parallelepipeds whose dimensions are specified with an expanded uncertainty (95% coverage interval) not exceeding 1/3 MPE. The dimensions of these objects in each axis must lie within the range of values limited by the minimum and maximum dimensions that the measuring instrument can measure. All adjacent walls and edges must be perpendicular to each other.

The nominal dimensions of the test objects must be $N \times d$, where N is a natural number and d is the value of the scale interval. The permissible tolerance after taking into account the expanded measurement uncertainty for the value $N \times d$ is $\pm 1/3d$.

Measuring instruments may be equipped with an extended indicating device or mode that displays measurement results with a scale interval equal to or less than $1/5d$. If the measuring instrument has this function and this function is used during verification, the dimensions of the test objects are not limited to the values of $N \times d$ provided that they are determined with an expanded uncertainty not exceeding $1/5d$.

The value N suitable for various values of the scale interval ($1, 2, 5 \times 10^n$ m) is $N = 10$, 20, etc.

7.3 Accuracy test

The accuracy test must not be performed outside the specified operating temperature range. The operating speed of product movement must be within the range approved for the given measuring instrument.

Before performing a test, when there is no test object in the measuring area, the measuring instrument must indicate zero values or readiness for measurement.

For each axis (length, width, height), five dimensions must be used, evenly spaced between the minimum and maximum dimensions for that axis, and the dimensions used must include the relevant minimum and maximum dimensions or values close to them. Three measurements must be taken for each dimension.

The measurement error for each dimension and each test object must comply with the MPE.

7.3.1 Determination of measurement error

If the measuring instrument is equipped with an extended indicating device or mode that displays measurement results with a scale interval equal to or less than $1/5d$ and this function is used during verification, the measurement error is determined from the relationship

measurement error = indicated value – dimension of the test object according to the calibration sheet

otherwise, it is determined from the relationship

measurement error = indicated value – nominal dimension of the test object

8 Measuring instrument testing

When testing measuring instruments pursuant to § 11a of the Metrology Act at the request of a person who may be affected by incorrect measurement, the procedure under Chapter 7 is followed, except for the last sentence of Article 7.1.

The accuracy test is always be performed if the integrity of the measuring instrument and its metrological properties are ensured and if it is technically feasible.

The accuracy test is performed on available values in the vicinity of the disputed dimension (smaller and larger), if known, otherwise the test is performed within the scope of subsequent verification.

The maximum permissible error during measuring instrument testing is twice the maximum permissible error specified in Article 2.1.

9 Notified standards

For the purposes of specifying the metrological and technical requirements for measuring instruments and specifying the testing methods for their type approval and verification arising from this Measure of a General Nature, the CMI shall notify Czech technical standards, other technical standards or technical documents of international or foreign organisations, or other technical documents containing more detailed technical requirements (hereinafter 'notified standards'). The CMI shall publish a list of these notified standards associated with the relevant measure, together with the Measure of a General Nature in a publicly accessible manner (on the website www.cmi.cz).

Compliance with notified standards or parts thereof is considered, to the extent and under the conditions stipulated by a general measure, to be compliance with the requirements stipulated by this measure to which these standards or parts thereof apply.

Compliance with a notified standard is one of the ways to demonstrate compliance. These requirements may also be met by using another technical solution guaranteeing an equivalent or higher level of protection of legitimate interests.

II.

G R O U N D S

Pursuant to § 14(1)(j) of the Metrology Act, the CMI has issued this Measure of a General Nature to implement § 6(2), § 9(1) and (9), and § 11a(3) of the Metrology Act, laying down metrological and technical requirements for specified measuring instruments and tests for type approval, verification and testing of specified measuring instruments – 'multi-dimensional measuring instruments'.

Decree No 345/2002 specifying measuring instruments for mandatory verification and measuring instruments subject to type approval, as amended, classifies this type of measuring instruments under item 1.2.2 in the annex entitled 'List of the types of specified measuring instruments' as measuring instruments subject to type approval and verification.

This legislation (Measure of a General Nature) was notified in accordance with Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services.

III.

I N S T R U C T I O N S

In accordance with § 172(1) AC, in conjunction with § 39(1) AC, the CMI has stipulated a time limit for comments of 30 days from the date of posting the draft on the official notice board. Comments submitted after this deadline will not be considered.

Stakeholders are hereby invited to comment on this draft Measure of a General Nature. With regard to the provisions of § 172(4) AC, the comments shall be submitted in writing.

In accordance with § 174(l) AC in conjunction with § 37(l) AC, it must be clear who is making the comments, which measure of a general nature they concern, how it contradicts legislation or how the measure of a general nature is inaccurate, and they must be signed by the person making them.

The supporting documents for this draft measure of a general nature may be consulted at the Czech Metrological Institute, Department of Legal Metrology, Okružní 31, 638 00 Brno, upon appointment by telephone.

This draft Measure of a General Nature will be posted for a period of 15 days.

Director General of the Czech Metrology Institute