

	<b>COOMET Recommendation</b>	<b>COOMET R/LM/8:2002</b>
	<b>Layout, presentation, drawing up and contents of Measuring instrument type specification for national register of measuring instruments</b>	
<i>Approved at the 12 COOMET Committee Meeting (Havana, Cuba, May 6 – 7, 2002)</i>		

This recommendation specifies requirements to the layout, presentation, drawing up and content of Measuring instrument (hereinafter referred to as *MI*) type specification.

## **1. REQUIREMENTS TO THE LAYOUT OF TYPE APPROVAL SPECIFICATION**

### **1.1 Structural elements of Type specification**

Type specification should include the following structural elements:

- title-page;
- information about document approval;
- issues:
  - type name and designation;
  - destination and field of application;
  - specification;
  - general technical and metrological characteristics;
  - sign of type approval;
  - complexity;
  - normative documents;
  - conclusion;
  - manufacturer.
- official signatures.

Layout and structure of type specification are given in Appendix A.

Lists of type specification are numbered in Arabic numerals.

### **1.2 Title-page**

Name of the documents must be on the title-page.

Name should be written by capital letters and placed in the middle of the page.

### **1.3 Information about document approval**

Information about status of a document should include:

- signature and its interpretation put by a manager<sup>1</sup> who carried out type approval tests of MI (following provisions of national directives);
- date of approval.

<sup>1</sup> The following persons can act as a "manager who carried out type approval tests" 1) the head of National metrological institution who is authorised or accredited to carry out type approval of MI 2) the head of State testing centre (laboratory), which is accredited to carry out type approval testing of MI.

Information should be found in the right upper corner after the name of the document.

#### **1.4 Official signatures**

A representative of testing centre (laboratory) who carried out tests with the aim of MI type approval and a manufacturer or its representative should sign the MI type specification.

National instructions prescribe the necessity of signing the MI type specification by manufacturer or its representative.

## **2. REQUIREMENTS TO THE CONTENTS, DRAWING UP AND PRESENTATION OF TYPE SPECIFICATION ISSUES**

### **2.1 REQUIREMENTS TO THE CONTENTS OF THE ISSUES**

#### **2.1.1 Issue "Name and designation"**

The issue includes:

- name and designation of MI type in exact compliance with technical documentation;
- designation and name of technical documentation for production of MI;
- registration number according to national register of measuring instruments.

Modifications of MI should not be included in the name and designation except the case when these modifications are indicated in the name of technical documentation. Modifications have to be listed in the issues "Description" and "General technical and metrological characteristics"

#### **2.1.2 Issue "Destination and field of application"**

This issue consists of the purpose of MI to be approved and advisable field of its application.

If necessary, the legally controlled applications of MI should be highlighted, e.g. commercial transactions, environmental protection and so on.

#### **2.1.3 Issue "Description"**

This issue includes the description of the mode of MI functioning, its constitution and structural specialities.

In case of MI has several modifications and/or models they should listed individually with an explanation of their differences from each other.

A photography of a general MI view, scheme of seal integrity from illegal access and designation of the places for applying the print stamps or placing the labels should be pointed in this issue.

It is admitted to extra point an electric circuit and drawings of MI and its ingredients in the issue or Appendix of Type specification (in case of need).

#### **2.1.4 Issue "General technical and metrological characteristics"**

The following general characteristics (advisable)<sup>2</sup> should be pointed in the issue:

- characteristics destined to determine results of measurements (without introducing corrections):
  - transformation feature (for transducers and measuring devices);
  - range of measurements, range of indications (if it is not coincide with range of measurements) or nominal value of measurand;

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<sup>2</sup> Metrological and technical parameters are specified in national directives

- nominal or individual value of a single-size standard or step-value measure;
- scale interval of measuring device or step-value measure;
- type of output code, quantity of code category, the smallest quantity of code (in case of MI is destined to return the results in digital code);
- accuracy characteristics of measuring instruments:
  - accuracy class;
  - limits of allowable basic relative / absolute / reduced error (in case of a reduced error a reference value should be indicated);
  - limits of allowable systematic error as a part of basic error (if applicable);
  - limits of allowable value of standard deviation of measurement result (if applicable);
  - limits of allowable variation of output signal (if applicable).
- characteristics of MI sensitivity to influencing quantities:
  - nominal influence trend;
  - limits of allowable deviation from influence trend.
- dynamic MI characteristics (if applicable):
  - transient characteristic;
  - impact transient characteristic;
  - amplitude-phase characteristic;
  - transfer function;
  - response rate;
  - time constant;
  - damping factor, etc.

**Technical MI characteristics:**

- parameters of electrical supply and power consumption;
- overall dimensions and mass of MI or its component parts;
- environmental conditions of use;
- particular MI service conditions (indicated if prescribed by relevant documents);
- information about reliability (average lifetime, average time between failures, etc);
- safety features including explosion protection.

Other parameters, which are specific for a MI group (e.g. electricity meter, fluid meter, water meter, gas-analyser, etc.) and are specified in normative and/or technical documents, should be indicated in the issue.

**2.1.5 Issue "Sign of type approval"**

A place and method of marking MI with a sign of type approval or, if necessary, putting it in supporting documentation should be described in this issue.

**2.1.6 Issue "MI Package"**

MI package should be agreed with the manufacturer in course of testing in indicated this issue.

If MI type to be approved consists of several elements then names of separate parts should be enumerated in this issue.

The package should include verification or calibration procedure if it is not included in a set of in-line document ation supplied with the MI.

### **2.1.7 Issue "Normative documents"**

This issue should contain information about normative documents to which MI compliance is verified (including names of national and international written standards).

A name and designation of the document of verification or calibration procedure (if applicable) should be also included in this issue.

### **2.1.8 Issue "Conclusion"**

This issue should contain declaration of MI type conformance to the requirements of relevant normative and/or technical documents.

The following should be also indicated in this issue:

- name and legal address of testing center (laboratory) which carried out type approval tests;
- information about accreditation of testing center (laboratory).

### **2.1.9 Issue "Manufacturer"**

This issue should contain a name and reference data of a manufacturer.

It is admitted to indicate a name and reference data of importer (if it is allowed by national regulations).

## **2.2 REQUIREMENTS TO THE PRESENTATION AND DRAWING UP**

### **2.2.1 Issue "Name and designation"**

It is admitted to omit a name of the issue in the Type specification.

Name of a type should be given in plural; the first name should be a noun but the following words – adjectives in order of their significance, i.e. a reverse word order.

Name and designation should take into account the requirements of the normative documents applicable to the given MI type (if there are such documents).

It is allowed to use letters of Russian or Roman alphabet for type designation in accordance with the national requirements.

It is recommended to place this information in a Table (form of the table is given in Appendix A).

### **2.2.2 Issue "Destination and field of application"**

In this issue a description should be given briefly without trace of advertising.

### **2.2.3 Issue "Description"**

In this issue information should be given briefly without advertising orientation.

It is advisable to give a scheme of unauthorised access preventive sealing and an indication of the places for applying stamps or seals in a compulsory Appendix to Type specification.

### **2.2.4 Issue "General technical and metrological characteristics"**

Metrological and technical characteristics of MI should be in conformance to international and national normative documents.

Examples of additional parameters, established for certain groups of MI, are given in Appendix B.

### **2.2.5 Issue "Sign of type approval"**

It is recommended to attach a figure pointing a place of applying the sign of type approval on MI.

### **2.2.6 Issue "MI Package"**

A note "MI Package is in accordance with technical documentation of the manufacturer" is prohibited. MI package specified in Type Specification should be identical to that pointed in all the technical documentation.

### **2.2.7 Issue "Normative documents"**

Designation and name of normative documents are given in this issue.

In case of no normative documents are present for the type to be approved, the issue should be named "NORMATIVE AND TECHNICAL DOCUMENTS" and thus represented by the technical documentation only.

If verification procedure is included in a set of in-line documentation then a name and designation of a document of which this procedure constitutes a part should be pointed and accompanied with appropriate identification (information about the organisation, which approved the procedure and date of such approval).

### **2.2.8 Issue "Conclusion"**

It is admitted to give only the designation of normative or technical documents according to which MI type found to be compliant if their complete names are given in issue "Normative documents".

Information about testing center should be the following.

- complete name of testing center;
- legal address;
- telephone, fax, e-mail;
- number of accreditation certificate.

### **2.2.9 Issue "Manufacturer"**

This issue should include:

- complete and short name of a manufacturer;
- legal address;
- telephone, fax, e-mail;

According to the decision of National metrology body this issue may additionally include:

- complete and short name of an importer;
- legal address;
- telephone, fax, e-mail;

**Appendix A**  
**Layout of measuring instrument type specification for**  
**national register of measuring instruments**

*Measuring instrument type specification*

**MEASURING INSTRUMENT TYPE SPECIFICATION**  
**for national register of measuring instruments**

*CERTIFY*

*Manager*

\_\_\_\_\_  
*name of the organization  
which carried out tests*

\_\_\_\_\_  
*signature and its interpretation*

" \_\_\_\_ " \_\_\_\_\_  
place of stamping

Type designation and name	<i>Put in the national register of measuring instruments</i> <i>Registration №</i> _____
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Produced according to \_\_\_\_\_

point registration numbers of written standards, code of technical specifications

\_\_\_\_\_  
technical documentation designation of the manufacturer, country

**DESTINATION AND FIELD OF APPLICATION**

\_\_\_\_\_  
point a destination of MI type and prospective field of application

**DESTRPTION**

\_\_\_\_\_  
describe a mode of MI functioning, its constitution and structural specialities, point modifications

\_\_\_\_\_  
describe a mode of MI functioning, its constitution and structural specialities; point a scheme of seal integrity

\_\_\_\_\_  
from illegal access and designation of the places for applying the stamps or seals

**GENERAL TECHNICAL AND METROLOGICAL CHARACTERISTICS**

\_\_\_\_\_  
describe general technical and metrological characteristics of MI

SIGN OF TYPE APPROVAL

point a place and method of marking a sign of type approval

PACKAGE

point a package of measuring instrument to be supplied, enumerate parts or elements (if applicable)

NORMATIVE DOCUMENTS

point a destination and name of normative documents according to which conformance is found

point a destination and name of normative document on the verification procedure

CONCLUSION

give a conclusion about accordance of the type of measuring instrument to the requirements of normative and/or technical documents

point a name and legal references of testing center (laboratory) and information about its accreditation

MANUFACTURER

point a name and legal references of the manufacturer

IMPORTER

point a name and legal references of an importer

Representative of testing center (laboratory)

signature

signature interpretation

place of stamping

manager of manufacturers or its representative

signature

signature interpretation

place of stamping

## Appendix B

### Examples of parameters established for MI groups

#### Electric pulse counters:

- full power on voltage and current circuits,
- the highest and lowest unit of measuring counter,
- transmission rate of pulses, etc.

#### Gas meters:

- loss of pressure,
- capacity of measuring indicator,
- circular volume,
- threshold of sensitivity,
- conjunctive dimensions, etc.

#### Water meters:

- nominal diameter of opening,
- values of conjunctive dimensions,
- threshold of sensitivity, etc.

#### Gas-analysers:

- parameters of non-measurable components,
- service conditions, etc.



## Appendix C

### Examples of drawing up Type specification

#### ISSUE "NAME AND DESIGNATION"

Examples of drawing up:

<b><i>Pressure measuring transducer «Sapfir»</i></b>	<i>Put in the national register of measuring instruments</i> <i>Registration № _____</i>
<b><i>Cold and hot tangential turbine flow meter JS</i></b>	<i>Put in the national register of measuring instruments</i> <i>Registration № _____</i>
<b><i>Automated measuring system for energy supply accounting «TOK-C»</i></b>	<i>Put in the national register of measuring instruments</i> <i>Registration № _____</i>

*Produced according to GOST*

\_\_\_\_\_ *point a registration number*

*Produced according to technical specifications*

\_\_\_\_\_ *point a code*

*Produced according to technical documentation of the manufacturer*

\_\_\_\_\_ *point a name of a firm and a country*

#### ISSUE "SIGN OF TYPE APPROVAL"

Examples of drawing up:

*Sign of type approval is placed on a special placard (faceplate) of MI by stamping (serigraphy, labeling) and typographically (offset print method) on a title-list of a user manual.*