



EC-TYPE EXAMINATION CERTIFICATE

Number: TCM 321/12 – 4906

Addition 1

This addition replaces all previous versions of this certificate in full wording.

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In accordance with: point 3 of annex 2 to Government Order No. 464/2005 Coll. (annex B of the Directive 2004/22/EC) from 19 October 2005 that lays down technical requirements on measuring instruments and implements in Czech Republic Directive 2004/22/EC of the European Parliament and of the Council.

Manufacturer: ZPA Nová Paka, a.s.
Pražská 470
509 39 Nová Paka
Czech Republic

For: temperature sensor pair as sub-assembly of thermal energy meter
type: 23x, 24x

temperature range (0÷180) °C
temperature difference $\Delta\Theta$ (3÷180) K

Valid until: 1 February 2022

Document number: 0115-CS-A003-12

Description: Essential characteristics, approved conditions and special conditions, if any, are described in this certificate.

Date of issue: 14 December 2012

Certificate approved by:




RNDr. Pavel Klenovský

1. Characterization of measuring instrument

Resistance temperature sensors type 23x and 24x consist of replaceable measuring insert with flange, ceramic terminal block and protective fitting (armature) made up by head and extension with screw thread for mounting in thermowell or as unit with thermowell. The head is equipped by lid and cable bushing for supply cable. Terminal block of sensor is accessible after tilting the lid, fastened by one screw or after loosening of safety screw and unscrewing of lid at sensors intended for use in environment with danger of explosion Exd.

Measuring insert of sensor is undisassembled and cable is tightly sealed in bushing and by Exd performance secured against pulling out. Inner connection of measuring cables is four-wire. Defined change of measuring resistance depending on change of temperature is used for measurement. Resistance temperature sensors of series 23x and 24x are simple resistance sensors used as replaceable parts of heatmeters according to ČSN EN 1434 and they meet the requirements of this technical standard except for ČSN EN 1434-2 chapter 3.2 (physical dimension of sensor and thermowell).

Nominal range of sensors can be (0 to 180) °C according to customer requirement.

2. Basic metrological specification

Resistance temperature sensor:

Nominal resistance:	100 Ohm
Maximum RMS value of sensor current:	3 mA
Recommended measuring current:	1 mA
Dimension of sensors:	see annex 1
Wiring of sensors:	4-wire
Temperature range:	(0 to 180) °C
Range of temperature difference $\Delta\Theta$:	(3 to 180) K
Response time $\tau_{0,5}$ without thermowell:	for sensor 23x < 6 s for sensor 24x < 5 s

Minimum length of measuring insert:	$L_{mv} = 210$ mm
Minimum immersion depth:	120 mm
Accuracy of single sensor:	2 K according to ČSN EN1434-1

3. Test

Technical test was performed with ten samples of sensors - serial numbers 09030014/1, 09030014/2, 0911-0001/1, 0911-0001/2, 0911-0003/1, 0911-0003/2, 0911-0004/1, 0911-0004/2, 0911-0007/1, 0911-0007/2 on the standard equipment CMI RI Praha according to ČSN EN 1434.

Technical information to individual types of temperature sensors are mentioned in following documents:

type of sensor	231	no. of document	TP 271106
	232		TP 271117
	233		TP 176297
	234		TP 176319
	235		TP 176385
	236		TP 278047
	241		TP 278058
	242		TP 278069
	243		TP 176341
	244		TP 176363

CMI test documentation and copies of above mentioned documents are stored at technical examiner in CMI RI Praha.

Test was carried out according to ČSN EN 1434-4 based on corresponding chapters, related to resistance temperature sensors, namely:



Minimum immersion depth ref.: 6.4.3.1

Test was performed with sensors no. 09030014/1 and 0911-0004/1. Test results are documented.

Response time ref.: 6.4.3.2

Test was performed with sensors no. 09030014/1 and 0911-0004/1 with regard to test result according to test protocol no. ZPA 01-09. Test results are documented.

Test of accuracy, error of sensor pair ref.: 6.4.3.3

Test was performed with sensors no. 09030014/1, 09030014/2, 0911-0001/1, 0911-0001/2, 0911-0003/1, 0911-0003/2, 0911-0004/1, 0911-0004/2, 0911-0007/1, 0911-0007/2. Test results are documented.

Test of long-term stability ref. 6.8.2

Test was performed with sensors no. 09030014/1, 09030014/2. Test results are documented.

These resistance sensors are able to fulfil their intended function.

4. Verification, marks of conformity, descriptive marking

Verification of resistance sensors type mentioned above will be performed according to ČSN EN 1434-5. Verification is always performed within required temperature range.

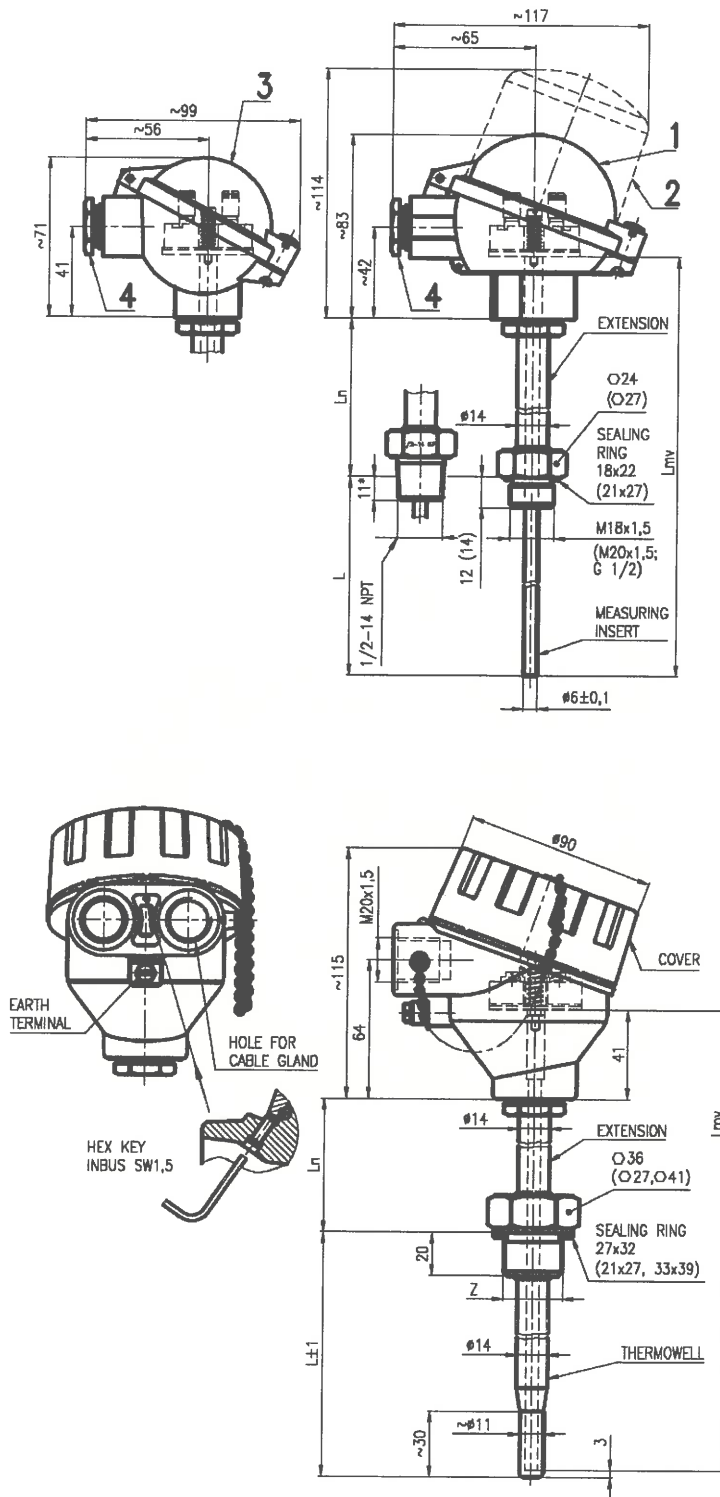
Every sensor must be marked with a label from durable material with indelible description and following details according to Government regulation no. 464/2005 Sb. and ČSN EN 1434-2:

- a) name of manufacturer or his trade mark,
- b) type of sensor, nominal resistance value R_0 and configuration of inner wires (e.g. Pt100/4).
- c) type marking according to specification (order number of product), serial number and year of manufacture,
- d) nominal temperature range Θ ,
- e) temperature difference range $\Delta\Theta$,
- f) clear differentiation of sensors for inlet and return pipes,
- g) number of EC-type examination certificate,
- h) CE mark and additional metrology marking.

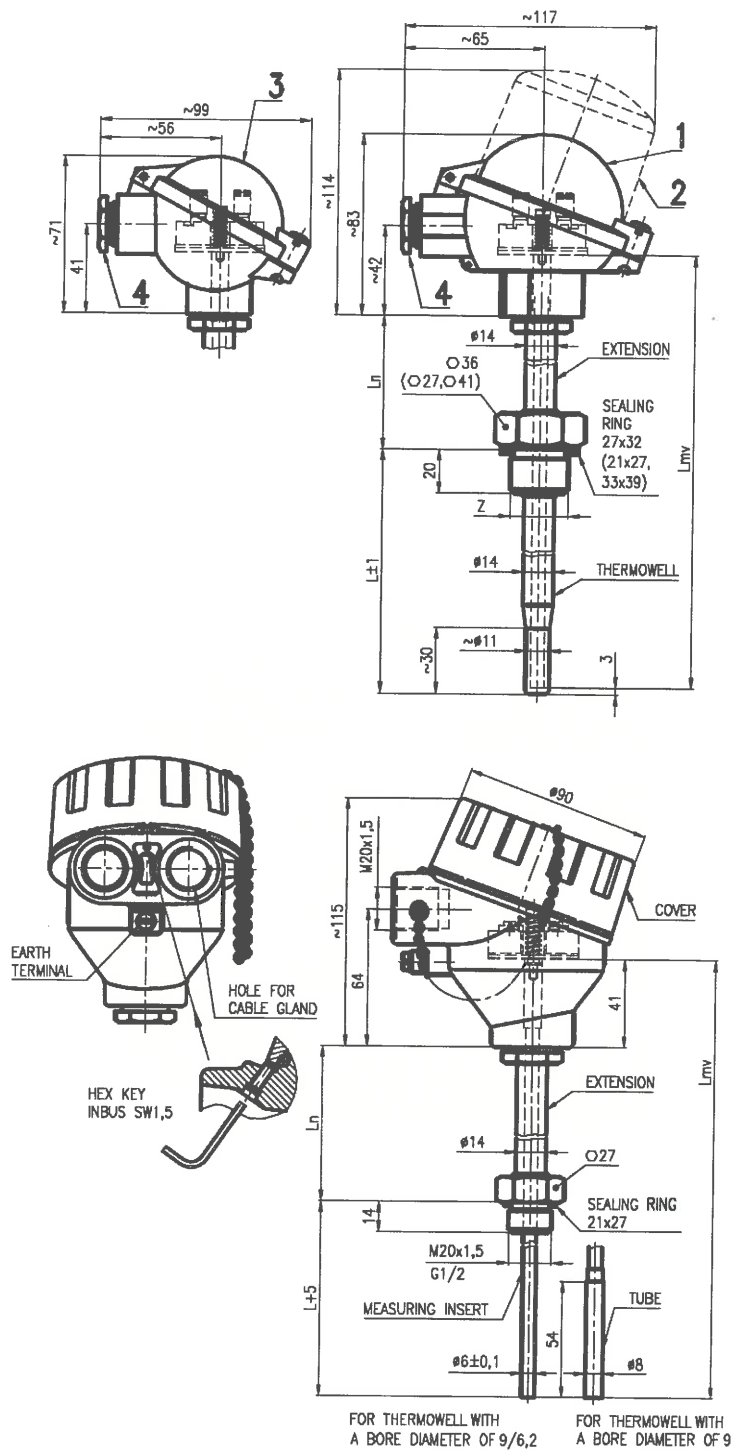
Resistance sensors which met the metrological requirements and requirements of this EC type-examination certificate evaluation will be labelled with safety mark (adhesive label) on the sensor head and on the ceramic terminal block of measuring insert. Sensors will be secured by mounting seal or by label after mounting in situ, which prevents unauthorized manipulation.

Annex 1

Type 23x (includes types 231, 232, 233, 234, 235 and 236)



Type 24x (includes types 241, 242, 243 and 244)



Real dimension charts are listed in manuals for each types.

- 1 - spherical head (alloy Al) or spherical head plastic
- 2 - spherical head with elevated lid (alloy Al)
- 3 - spherical head small (alloy Al)
- 4 - cable bushing M20x1.5

- L - nominal length
 - L_n - length of extension
 - L_{mv} - length of measuring insert
 - 11* - standard length of thread
 - Z - connecting thread of sensor extension
- | | |
|------------------------|------|
| G1/2, M20x1,5 | OK27 |
| G3/4, M27x2, 3/4-14NPT | OK36 |
| G1 | OK4 |

