

Calibration certificate

Drago Groselj (ARSO)



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Contents of calibration certificate according to ISO/IEC 17025:2017 standard

7.8.2 Clause: Common requirements for reports (test, calibration or sampling)

7.8.4 Clause: Specific requirements for calibration certificates

Calibration certificate

Accreditation body logo

A title (e.g. „Calibration Certificate“)

The name and contact information of the customer

A description, unambiguous identification, and, when necessary, the condition of the item

Identification of the method used

The location of performance of the laboratory activities

The conditions (e.g. environmental) under which measurements were made that have an influence on measurements results.

The date(s) of performance of the laboratory activity



LMK LABORATORIJ
ZA METROLOGIJO
IN KAKOVOST



KALIBRACIJSKI CERTIFIKAT | CALIBRATION CERTIFICATE

stran 1 od 2
page 1 of 2

Št.cert. / Cert.No. LMK1124D160

naročnik
applicant

merilnik rosišča

instrument
instrument

proizvajalec in tip
manufacturer and type

MBW, 373 LHX

serijska številka
serial number

14-0524

kalibracijska metoda
calibration method

Merilnik rosišča je bil umerjen s primarnima generatorjema vlage PGR-LMK-01 in PGR-LMK-02 v skladu s temperaturno lestvico ITS-90.

identifikacija metode
method identification

LMK_CP_GECP_05.07, LMK_CP_HUMS_06.09

mesto izvedbe
site of calibration

LMK

pogoji okolja
environmental conditions

temperatura 20 °C ± 5 °C, relativna vlaga 15% - 75%

čas kalibracije
calibration period

4.11.2024 do 20.11.2024

rezultati
results

Rezultati kalibracije so podani na strani 2.

A statement identifying how the measurements are metrologically traceable

rezultati
results

Rezultati kalibracije so podani na strani 2.

Meritve so bile izvedene z uporabo etalonov, katerih sledljivost do nacionalnih ali mednarodnih etalonov je bila predstavljena Slovenski akreditaciji (SA). Navedena razširjena merilna negotovost je podana kot standardna negotovost meritve pomnožena s faktorjem k , ki ustreza verjetnosti približno 95%. Standardna merilna negotovost je določena v skladu s publikacijo EA-4/02. SA je podpisnik večstranskega sporazuma (MLA) v okviru Evropske akreditacije (EA) o medsebojnem priznavanju poročil o preskušanju in kalibracijskih certifikatov.

The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the Slovenian Accreditation (SA). The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k that corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with the publication EA-4/02. SA is a signatory of the Multilateral Agreement (MLA) of the European Co-operation for Accreditation (EA) for mutual recognition of test reports and calibration certificates.

The date of issue of the report

Odobril
Approved by

Datum: 20.11.2024
Date

Odgovorna oseba LMK:
Responsible person of LMK

Datum: 20.11.2024
Date

Identification of the person(s) authorizing the report

dr. Domen Hudoklin, univ. dipl. inž. el.

prof. dr. Janko Drnovšek
predstojnik laboratorija
head of the laboratory

The name and address of the laboratory

Z izdajo certifikata LMK ne prevzema nobene odgovornosti za posledice, ki bi nastale zaradi nepravilne uporabe instrumenta in/ali certifikata.
This certificate was issued provided that the LMK does not assume any liability as a consequence of improper use of the instrument and/or the certificate.

Laboratorij za metrologijo in kakovost (LMK)
Tržaška cesta 25, 1000 Ljubljana, Slovenija
tel.: + 386 (0)1 4768 224, 4768 798
fax: + 386 (0)1 4264 633
www.lmk.si

Dovoljeno je razmnoževanje celotnega certifikata. Razmnoževanje posameznih delov je dovoljeno samo s pisno odobritvijo laboratorija. Z izdajo certifikata Slovenska Akreditacija ne prevzema nobene odgovornosti. Reproduction of the complete certificate is allowed. Parts of the certificate may only be reproduced with written approval of the laboratory. This certificate was issued provided that the Slovenian Accreditation do not assume any liability.

The results with, where appropriate, the units of measurement

The measurement uncertainty of the measurement result presented in the same unit as that of the measurand or in a term relative to the measurand

A statement to the effect that the results relate only to the items tested, calibrated or sampled

rezultati
results

Tabela vsebuje naslednje podatke:

1. pravo vrednost temperature rosišča $t_{d,90}$, določeno z referenčnim merilnikom rosišča, v skladu z mednarodno temperaturno lestvico ITS-90
2. kazanje temperature rosišča t_d umerjanega merilnika rosišča pri pravi vrednosti temperature rosišča $t_{d,90}$
3. korekcijo $(t_{d,90} - t_d)$, ki je podana kot razlika med pravo vrednostjo temperature rosišča in kazanjem umerjanega merilnika rosišča

$t_{d,90} / ^\circ\text{C}$	$t_d / ^\circ\text{C}$	$(t_{d,90} - t_d) / ^\circ\text{C}$
-50	-49,857	-0,143
-30	-29,862	-0,138
-10	-9,868	-0,132
1	1,129	-0,129
20	20,124	-0,124
40	40,118	-0,118
60	60,113	-0,113
70	70,110	-0,110

Razširjena merilna negotovost v kalibracijskem območju od $-50\text{ }^\circ\text{C}$ do $70\text{ }^\circ\text{C}$ znaša $0,07\text{ }^\circ\text{C}$.

S pomočjo regresije izmerjenih vrednosti je podana relacija $t_{d,90}(t_d)$ z naslednjo enačbo:

$$t_{d,90} = \sum_i A_i t_d^i$$

i	A_i
0	-0,1293
1	1,0003

komentar
comment

Navedeni rezultati so pridobljeni na podlagi regresije pri izmerjenih vrednostih in so odraz stanja v času umerjanja. Nanašajo se zgolj na predmet umerjanja z navedeno serijsko številko.

The maximum flow measured was $0,6\text{ l/min}$. The maximum pressure difference between the saturator and output of UUC head was $2,7\text{ hPa}$.

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Clear identification when results are from external providers.

Where relevant, a statement of conformity with requirements or specifications.
ISO/IEC 17025:2017 Clause 7.8.6

Where appropriate, opinions and interpretation.
ISO/IEC 17025:2017 Clause 7.8.7

A calibration certificate or calibration label **shall not** contain any recommendation on the calibration interval, except where this has been agreed with customer.

CALIBRATED BY	
No. CERTIFICATE	
DATE	
NEXT CAL. DUE	



Thank you.



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