

**KERN CALIBRATION** KERN & SOHN GmbH  
 Akkreditiertes Kalibrierlabor seit 1994. Accredited calibration laboratory since 1994.  
 Ihr Partner für Kalibrierdienstleistungen, Prüfmittelmanagement und Beratung. Your partner for calibration services, test equipment management and support.

Mitglied im / member of the Deutschen Kalibrierdienst **DKD** **DAkKS**

Sample: D-K 19405-01-00 2023-04

Kalibrierschein / Calibration certificate: Sample-2023-04/1 1

Kalibrierzeichen / Calibration mark: 3

Gegenstand / Object: Gewichtsatz, 1 mg - 1 kg Klasse E2 2  
 Set of weights, 1 mg - 1 kg Class E2

Hersteller / Manufacturer: KERN & Sohn GmbH Ziegelei 1 D-72336 Ballingen Germany 3

Typ / Type: 313-052

Fabrikat/Serien-Nr. / Serial number: G123456789

Auftraggeber / Customer: Mustermann GmbH 4

Auftragsnummer / Order No.: 2023-123456789

Ort der Kalibrierung / Place of calibration: Kalibrierlaboratorium KERN Calibration - Laboratory KERN

Umgebungsbedingungen / Ambient conditions: Die Kalibrierung wurde bei folgenden Umgebungsbedingungen ausgeführt: The calibration was carried out under the following ambient conditions: 5

	von / from	bis / to	Unsicherheit / uncertainty
Temperatur (°C) / temperature	22,9	24,1	0,1
rel. Luftfeuchte (%) / relative humidity	48,5	53,4	2,0
Luftdruck (hPa) / air pressure	942,5	948,5	0,3

Magnetische Eigenschaften / Magnetic properties: Der Hersteller hat bestätigt, dass die Gewichtsstücke die magnetischen Eigenschaften gemäß R111:2004 einhalten. The manufacturer has confirmed the compliance of the magnetic properties of the weight pieces with the OIML R111:2004.

Referenzgewichte / Standard weights: 123-D-K-19405-01-00-2022-05

Material / angenommene Dichte: Material / assumed density:

Nennwert / nominal value	Dichte / density	Unsicherheit / uncertainty	Material / material	Form / shape
1 mg - 500 mg	7950 kg/m³	140 kg/m³	Edelstahl / Stainless steel	Diskant / Discant
1 g - 1 kg	8000 kg/m³	100 kg/m³	Edelstahl / Stainless steel	Knopf / Cylindrical form

Messergebnisse / Measurement results: 6

Nennwert / nominal value	Kennzeichnung / marking	konventioneller Wägewert / conventional mass	Unsicherheit $\pm$ 2 / uncertainty	Fehlergrenze / max. perm. error	Klasse* / class*
1 mg		1 mg + 0.0010 mg	0.0020 mg	± 0.0060 mg	E2 ✓
2 mg		2 mg + 0.0025 mg	0.0050 mg	± 0.0060 mg	E2 ✓
5 mg	*	5 mg + 0.0016 mg	0.0020 mg	± 0.0060 mg	E2 ✓
10 mg		10 mg + 0.0010 mg	0.0020 mg	± 0.0060 mg	E2 ✓
20 mg		20 mg + 0.0028 mg	0.0020 mg	± 0.0060 mg	E2 ✓
50 mg	*	50 mg + 0.0011 mg	0.003 mg	± 0.010 mg	E2 ✓
100 mg		100 mg + 0.001 mg	0.004 mg	± 0.012 mg	E2 ✓
200 mg		200 mg + 0.002 mg	0.005 mg	± 0.016 mg	E2 ✓
500 mg	*	500 mg + 0.003 mg	0.006 mg	± 0.020 mg	E2 ✓
1 g		1 g + 0.002 mg	0.008 mg	± 0.025 mg	E2 ✓
2 g		2 g + 0.002 mg	0.010 mg	± 0.030 mg	E2 ✓
5 g	*	5 g + 0.002 mg	0.013 mg	± 0.040 mg	E2 ✓
10 g		10 g + 0.002 mg	0.016 mg	± 0.050 mg	E2 ✓
20 g		20 g + 0.002 mg	0.020 mg	± 0.060 mg	E2 ✓
50 g	*	50 g + 0.005 mg	0.026 mg	± 0.080 mg	E2 ✓
100 g		100 g + 0.015 mg	0.028 mg	± 0.080 mg	E2 ✓
200 g		200 g + 0.02 mg	0.03 mg	± 0.10 mg	E2 ✓
500 g	*	500 g + 0.01 mg	0.05 mg	± 0.16 mg	E2 ✓
1 kg		1 kg + 0.05 mg	0.10 mg	± 0.30 mg	E2 ✓
200 g		200 g - 0.00 mg	0.10 mg	± 0.30 mg	E2 ✓
500 g		500 g + 0.10 mg	0.26 mg	± 0.80 mg	E2 ✓
1 kg		1 kg + 0.1 mg	0.5 mg	± 1.6 mg	E2 ✓

1 Official document  
 2 Item to be calibrated  
 3 Traceability, see the Glossary  
 4 Identification/Applicant  
 5 Environmental conditions  
 6 Metrological component  
 7 Conventional mass  
 8 Uncertainty of measurement, see the Glossary

**Traceable KERN test weights – Calibration of test weights**

Calibrated measuring equipment requires calibrated checking equipment. For balances, these are calibrated test weights, also called "standard weights".

**KERN will calibrate your test weights**

- In all classes with permissible error limits E1–M3 according to OIML R111:2004 (for tolerance tables, see page 180), in sizes 1 mg to 2500 kg.
- With free nominal value
- Newton (N)
- Independent of design (special designs)

**The advantages of using the KERN in-house calibration**

You send your test weights to us.

- Excellent price performance ratio
- The quickest processing time
  - DAkKS standard service: 4 working days
  - DAkKS express service: 48 hrs (new weights)
- The most modern calibration methods with robot controlled comparators allow the most accurate calibration results and fastest throughput time
- KERN DAkKS calibration certificates are internationally recognised
- A calibration service which is independent of the brand
- KERN also reconditions existing customer weights (e.g. cleaning or readjustment)
- On request, we can also provide a pick-up and collection service with our parcel service

**The advantages of using the KERN on-site calibration**

We visit you.

We would be pleased to visit you within Germany and carry out the calibration of your reference standards to OIML classes M1–M3, 10 kg–2500 kg with permissible error limits, using our mobile MACOS system. Minimized downtime of your checking equipment and direct contact with our expert are the major benefits of this service. Price on request.

**Recalibration**

- The recalibration schedule depends on the frequency of use, the conditions of use and the safety requirements
- In terms of standardisation, no particular recalibration interval is specified
- We would recommend that you recalibrate your test weights every six months if they are used intensively, and every 12 months with normal use
- We would be pleased to monitor your recalibration schedule

DAkKS calibration certificate for test weights (extract).

- 1 Official document
- 2 Item to be calibrated
- 3 Traceability, see the Glossary
- 4 Identification/Applicant
- 5 Environmental conditions
- 6 Metrological component
- 7 Conventional mass
- 8 Uncertainty of measurement, see the Glossary

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# Recalibration Price of Test Weights (DAkKS Calibration)

Class acc.	→ E1 <sup>2)</sup> with volume determination	E1 <sup>1)</sup> without volume determination	E2 <sup>1)</sup>	F1/F2 <sup>1)</sup> * F2 only	M1/M2/M3 <sup>1)</sup>					
Nominal value ↓	KERN	Price € excl. of VAT ex works	KERN	Price € excl. of VAT ex works	KERN	Price € excl. of VAT ex works	KERN	Price € excl. of VAT ex works	KERN	Price € excl. of VAT ex works
1 mg	-	-	962-251R	77,-	962-351R	34,-	962-451R	22,-	962-651R	18,-
2 mg	-	-	962-252R	77,-	962-352R	34,-	962-452R	22,-	962-652R	18,-
5 mg	-	-	962-253R	77,-	962-353R	34,-	962-453R	22,-	962-653R	18,-
10 mg	-	-	962-254R	77,-	962-354R	34,-	962-454R	22,-	962-654R	18,-
20 mg	-	-	962-255R	77,-	962-355R	34,-	962-455R	22,-	962-655R	18,-
50 mg	-	-	962-256R	77,-	962-356R	34,-	962-456R	22,-	962-656R	18,-
100 mg	-	-	962-257R	77,-	962-357R	34,-	962-457R	22,-	962-657R	18,-
200 mg	-	-	962-258R	77,-	962-358R	34,-	962-458R	22,-	962-658R	18,-
500 mg	-	-	962-259R	77,-	962-359R	34,-	962-459R	22,-	962-659R	18,-
1 g	963-231	245,-	962-231R	77,-	962-331R	34,-	962-431R	22,-	962-631R	18,-
2 g	963-232	245,-	962-232R	77,-	962-332R	34,-	962-432R	22,-	962-632R	18,-
5 g	963-233	245,-	962-233R	77,-	962-333R	34,-	962-433R	22,-	962-633R	18,-
10 g	963-234	245,-	962-234R	77,-	962-334R	34,-	962-434R	22,-	962-634R	18,-
20 g	963-235	245,-	962-235R	77,-	962-335R	34,-	962-435R	22,-	962-635R	18,-
50 g	963-236	245,-	962-236R	77,-	962-336R	34,-	962-436R	22,-	962-636R	18,-
100 g	963-237	245,-	962-237R	77,-	962-337R	43,-	962-437R	25,-	962-637R	20,-
200 g	963-238	245,-	962-238R	77,-	962-338R	43,-	962-438R	25,-	962-638R	20,-
500 g	963-239	245,-	962-239R	77,-	962-339R	43,-	962-439R	25,-	962-639R	20,-
1 kg	963-241	245,-	962-241R	77,-	962-341R	43,-	962-441R	25,-	962-641R	20,-
2 kg	963-242	550,-	962-242R	95,-	962-342R	52,-	962-442R	29,-	962-642R	21,-
5 kg	963-243	550,-	962-243R	95,-	962-343R	52,-	962-443R	29,-	962-643R	21,-
10 kg	963-244	550,-	962-244R	95,-	962-344R	52,-	962-444R	29,-	962-644R	21,-
20 kg	963-245	1280,-	962-245R	720,-	962-345R	68,-	962-445R	35,-	962-645R	27,-
50 kg	963-246	1500,-	962-246R	800,-	962-346R	79,-	962-446R	48,-	962-646R	29,-
100 kg	-	-	-	-	-	-	962-591R*	143,-	962-691R	77,-
200 kg	-	-	-	-	-	-	962-592R*	143,-	962-692R	77,-
500 kg	-	-	-	-	-	-	962-593R*	143,-	962-693R	77,-
1000 kg	-	-	-	-	-	-	-	-	962-694R	169,-
2000 kg	-	-	-	-	-	-	-	-	962-695R	310,-
1 mg-500 mg	-	-	962-250R	500,-	962-350R	235,-	962-450R	124,-	962-650R	77,-
1 mg-50 g	963-201	1400,-	962-201R	820,-	962-301R	385,-	962-401R	205,-	962-601R	132,-
1 mg-100 g	963-202	1520,-	962-202R	850,-	962-302R	425,-	962-402R	220,-	962-602R	138,-
1 mg-200 g	963-203	1750,-	962-203R	930,-	962-303R	485,-	962-403R	245,-	962-603R	155,-
1 mg-500 g	963-204	1860,-	962-204R	970,-	962-304R	520,-	962-404R	255,-	962-604R	162,-
1 mg-1 kg	963-205	1980,-	962-205R	1050,-	962-305R	560,-	962-405R	270,-	962-605R	170,-
1 mg-2 kg	963-206	2580,-	962-206R	1110,-	962-306R	610,-	962-406R	310,-	962-606R	187,-
1 mg-5 kg	963-207	2890,-	962-207R	1160,-	962-307R	650,-	962-407R	325,-	962-607R	198,-
1 mg-10 kg	963-208	3290,-	962-208R	1200,-	962-308R	700,-	962-408R	355,-	962-608R	205,-
1 g-50 g	963-215	1010,-	962-215R	365,-	962-315R	159,-	962-415R	83,-	962-615R	51,-
1 g-100 g	963-216	1100,-	962-216R	395,-	962-316R	190,-	962-416R	95,-	962-616R	61,-
1 g-200 g	963-217	1340,-	962-217R	475,-	962-317R	250,-	962-417R	121,-	962-617R	75,-
1 g-500 g	963-218	1460,-	962-218R	520,-	962-318R	290,-	962-418R	135,-	962-618R	85,-
1 g-1 kg	963-219	1600,-	962-219R	560,-	962-319R	320,-	962-419R	148,-	962-619R	91,-
1 g-2 kg	963-220	2240,-	962-220R	640,-	962-320R	395,-	962-420R	186,-	962-620R	110,-
1 g-5 kg	963-221	2620,-	962-221R	660,-	962-321R	445,-	962-421R	205,-	962-621R	119,-
1 g-10 kg	963-222	3060,-	962-222R	720,-	962-322R	480,-	962-422R	225,-	962-622R	128,-

<sup>1)</sup> Processing time 4 working days, <sup>2)</sup> Processing time 15 working days, <sup>1)</sup> Preparation of reverification of balances, 969-006R, € 25,-

Additional costs for preparation, overhaul and adjustment before the calibration	KERN	Price excl. of VAT ex works €
<b>Preparation of weights (e.g. cleaning, etc.)</b>		
Single weight	969-001R	5,-
Weight set	969-002R	20,-
<b>Subsequent services are carried out after confirmation</b>		
Continued overhaul of weights (e.g. wet-cleaning, markings, repair, special packaging, adjustment E1 (DAkKS only), E2 ...)	969-005R	<b>T &amp; M basis</b>
Adjustment, per weight only available for weights with adjustment chamber (F1-M3)	969-010R	15,-
<b>Second calibration after adjustment or substitution, per weight</b>		
Class E1	969-210R	63,-
Class E1 incl. volume determination	969-211R	230,-
Class E2	969-310R	30,-
Class F1/F2	969-410R	20,-
Class M1-M3	969-610R	16,-
<b>Testing of magnetic properties according to OIML R111:2004, per weight</b>	961-115R	15,-
<b>Calibration of NON-OIML test weights, additional price per weight</b>	-	8,-

### KERN DAkKS Express Service\*<sup>1)</sup>

<b>DAkKS standard service</b> Class E2-M3	4 working days
<b>DAkKS standard service</b> Class E1, 1 mg-500 mg, and recalibration 1 g-10 kg with a known volume	10 working days
Class E1, ≥ 1 g, incl. volume determination (new weights)	15 working days

<sup>1)</sup> The delivery time for recalibrations can vary depending on the order situation as well as in case of queries, bottlenecks, etc.



**DAkKS Express service in 48 hours** except for class E1

- Urgent order is received at KERN by 12:00 noon at the latest
- Ready for shipping at KERN within two working days, at 12:00 noon
- Return by standard parcel service or express shipping (Costs and processing time on request)
- Additional cost for DAkKS Express Service, for each KERN test weight KERN KERN 962-115 € 21,-
- For Express shipping, see page 226

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## Verification Prices for Test Weights and (Crane) Scales

Class acc. OIML R 111:2004	→ E2 <sup>1)</sup> with verification certificate	F1 <sup>1)</sup> with verification certificate	M1 <sup>1)</sup> with verification certificate			
Nominal value ↓	KERN	Price € excl. of VAT ex works	KERN	Price € excl. of VAT ex works	KERN	Price € excl. of VAT ex works
1 mg	952-351	54,-	952-451	46,-	952-651	32,-
2 mg	952-352	54,-	952-452	46,-	952-652	32,-
5 mg	952-353	54,-	952-453	46,-	952-653	32,-
10 mg	952-354	54,-	952-454	46,-	952-654	32,-
20 mg	952-355	54,-	952-455	46,-	952-655	32,-
50 mg	952-356	54,-	952-456	46,-	952-656	32,-
100 mg	952-357	54,-	952-457	46,-	952-657	32,-
200 mg	952-358	54,-	952-458	46,-	952-658	32,-
500 mg	952-359	54,-	952-459	46,-	952-659	32,-
1 g	952-331	54,-	952-431	46,-	952-631	32,-
2 g	952-332	54,-	952-432	46,-	952-632	32,-
5 g	952-333	54,-	952-433	46,-	952-633	32,-
10 g	952-334	54,-	952-434	46,-	952-634	32,-
20 g	952-335	54,-	952-435	46,-	952-635	32,-
50 g	952-336	54,-	952-436	46,-	952-636	32,-
100 g	952-337	60,-	952-437	46,-	952-637	32,-
200 g	952-338	60,-	952-438	48,-	952-638	32,-
500 g	952-339	60,-	952-439	48,-	952-639	32,-
1 kg	952-341	60,-	952-441	48,-	952-641	32,-
2 kg	952-342	68,-	952-442	54,-	952-642	34,-
5 kg	952-343	68,-	952-443	54,-	952-643	34,-
10 kg	952-344	68,-	952-444	54,-	952-644	42,-
20 kg	952-345	79,-	952-445	56,-	952-645	48,-
50 kg	-	-	952-446	67,-	952-646	50,-
1 mg-500 mg	952-350	270,-	952-450	141,-	952-650	88,-
1 mg-50 g	952-301	440,-	952-401	230,-	952-601	147,-
1 mg-100 g	952-302	480,-	952-402	250,-	952-602	156,-
1 mg-200 g	952-303	540,-	952-403	280,-	952-603	174,-
1 mg-500 g	952-304	580,-	952-404	290,-	952-604	183,-
1 mg-1 kg	952-305	600,-	952-405	305,-	952-605	192,-
1 mg-2 kg	952-306	690,-	952-406	345,-	952-606	210,-
1 mg-5 kg	952-307	750,-	952-407	375,-	952-607	225,-
1 mg-10 kg	952-308	790,-	952-408	400,-	952-608	230,-
1 g-50 g	952-315	176,-	952-415	102,-	952-615	67,-
1 g-100 g	952-316	210,-	952-416	108,-	952-616	71,-
1 g-200 g	952-317	275,-	952-417	138,-	952-617	85,-
1 g-500 g	952-318	315,-	952-418	152,-	952-618	94,-
1 g-1 kg	952-319	340,-	952-419	167,-	952-619	104,-
1 g-2 kg	952-320	425,-	952-420	210,-	952-620	124,-
1 g-5 kg	952-321	470,-	952-421	230,-	952-621	135,-
1 g-10 kg	952-322	520,-	952-422	255,-	952-622	145,-

## KERN verification delivery time

Standard verification service  
Class E2 - M1 6 working days

Additional costs for preparation, overhaul and adjustment before the verification  
KERN  
Price excl. of VAT ex works €

### Preparation of weights (e.g. cleaning, etc.)

Single weight 969-008R 5,-

Weight set 969-009R 19,-

### Subsequent services are carried out after confirmation

Continued overhaul of weights (e.g. wet-cleaning, markings, repair, special packaging, adjustment E2 ...)  
969-005R T & M basis

Adjustment, per weight only available for weights with adjustment chamber (F1/F2 - M1)  
969-010R 15,-

### Verification after adjustment or substitution, per weight

Class E2 969-310R 30,-

Class F1/F2 969-410R 20,-

Class M1 969-610R 16,-

## Verification prices for balances

### Accuracy class I (precision balances)<sup>1)</sup>

[Max] ≤ 5 kg<sup>1)</sup>

Reverification  
KERN  
Price excl. of VAT ex works €

950-101R 235,-

[Max] > 5 kg<sup>1)</sup>

950-102R 305,-

### Accuracy class II (precision balances)<sup>1)</sup>

[Max] ≤ 5 kg<sup>1)</sup>

950-116R 120,-

[Max] > 5 kg - 50 kg<sup>1)</sup>

950-117R 146,-

[Max] > 50 kg - 350 kg<sup>1)</sup>

950-118R 225,-

### Accuracy class III-IV<sup>1)</sup>

Bench scales and industrial scales (excl. crane scales)

[Max] ≤ 5 kg<sup>1)</sup>

950-127R 114,-

[Max] > 5 kg - 50 kg<sup>1)</sup>

950-128R 114,-

[Max] > 50 kg - 350 kg<sup>1)</sup>

950-129R 184,-

[Max] > 350 kg - 1500 kg<sup>1)</sup>

950-130R 270,-

[Max] > 1500 kg - 2900 kg<sup>1)</sup>

950-131R 375,-

[Max] > 2900 kg - 6000 kg<sup>1)</sup>

950-132R 580,-

Crane scales

[Max] > 50 kg - 350 kg<sup>1)</sup>

950-129HR 200,-

[Max] > 350 kg - 1500 kg<sup>1)</sup>

950-130HR 330,-

[Max] > 1500 kg - 2900 kg<sup>1)</sup>

950-131HR 480,-

[Max] > 2900 kg - 6000 kg<sup>1)</sup>

950-132HR 720,-

[Max] > 6000 kg - 12000 kg<sup>1)</sup>

950-133HR 1160,-

<sup>1)</sup> Processing time 4 working days, <sup>2)</sup> Processing time 15 working days, <sup>1)</sup> Preparation of reverification of balances, 969-006R, € 25,-

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