

AK-4 Automatic Mass Comparator

Class-leading automatic mass comparator



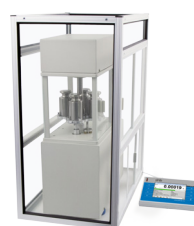
AK-4/100



AK-4/5000



AK-4/10000, AK-4/16000



External anti-draft chamber



Positioners facilitating precise loading of weights

Functions



Mass
comparator



Ambient conditions
measurement



Proximity
sensors



Replaceable
units



Multilingual
menu

Features

Effective and Excellent Measurement

The AK-4 automatic mass comparator enables determining mass deviations of weights with the minimum possible operator participation. The comparator allows to compare weights of class E1 and lower of mass ranging between 10 g and 10 kg.

Comparison of Mass Standard Sets

There are two versions of the mass comparator: 4-position for 1 reference weight and 3 test weights, and 2-position for reference weight being a combination of mass value of 3 separate weights.

Excellent Measurement Repeatability

AK-4 automatic mass comparator, due to the elimination of the human factor, temperature changes and air drafts, guarantees excellent measurement repeatability when compared to manual mass comparator.

Design and Functionality

An element that controls mass comparator operation is a digital management module, which is placed inside comparator's chamber along with an automatic mass standard feeder. Mass comparator is operated by means of indicator connected to the comparator controller. Control elements are not mechanically integrated with the construction thanks to what the influence of ambient conditions on mass comparator chamber is significantly reduced.

Dedicated Software

Specially designed RMCS computer software enables comprehensive realisation of calibration procedures in laboratory. The system manages the whole calibration process, starting from the moment the order is placed, through procedure performance, to the moment of issuing the calibration certificate.

Technical Specifications

		AK-4/100	AK-4/100.1	AK-4/1000
OIML calibration range E1		10 g ÷ 100 g	10 g ÷ 100 g	100 g ÷ 1 kg
OIML calibration range E2		10 g ÷ 100 g	10 g ÷ 100 g	100 g ÷ 1 kg
OIML calibration range F1		10 g ÷ 100 g	10 g ÷ 100 g	100 g ÷ 1 kg
OIML calibration range F2		10 g ÷ 100 g	10 g ÷ 100 g	100 g ÷ 1 kg
OIML calibration range M1		—	—	—
OIML calibration range M2		—	—	—
Maximum capacity [Max]		110 g	106 g	1.02 kg
Readability [d]		0.001 mg	0,0001 mg	0.005 mg
Standard repeatability [5% Max]*		1.5 µg	0.8 µg	8 µg
Standard repeatability [Max] *		2 µg	0.8 µg	12 µg
Permissible repeatability *		3.5 µg	1.5 µg	25 µg
Stabilization time		30 s	30 s	30 s
Adjustment		external	external	external
Electric compensation range		– 1 g ÷ 10 g	– 1 g ÷ 10 g	– 10 g ÷ 20 g
Internal supplementary weights		semi-automatic	semi-automatic	semi-automatic
Eccentricity (for test weight)		0 mg	0 mg	0 mg
Magazine positions		4 positions	4 positions	4 positions
Display		5.7" colour resistive touch screen	5.7" colour resistive touch screen	5.7" colour resistive touch screen
Keypad		8 keys	8 keys	8 keys
Ingress protection - indicator		IP 43	IP 43	IP 43
Touch-free operation		2 programmable sensors	2 programmable sensors	2 programmable sensors
USB-A		2	2	2
Ethernet		10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
RS 232		2	2	2
Wi-Fi®		802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
IN/OUT		4 × IN, 4 × OUT	4 × IN, 4 × OUT	4 × IN, 4 × OUT
Power supply		110 ÷ 230 V AC / 50 ÷ 60 Hz	110 ÷ 230 V AC / 50 ÷ 60 Hz	110 ÷ 230 V AC / 50 ÷ 60 Hz
Operating temperature		+15 ÷ +30 °C	+15 ÷ +30 °C	+15 ÷ +30 °C
Operating temperature change rate		± 0.5 °C / 12 h (± 0.3 °C / 4 h)	± 0.5 °C / 12 h (± 0.3 °C / 4 h)	± 0.5 °C / 12 h (± 0.3 °C / 4 h)
Relative humidity variations		±5% / 12 h (± 3% / 4 h)	±5% / 12 h (± 3% / 4 h)	±5% / 12 h (± 3% / 4 h)
Relative humidity***		40 ÷ 60%	40 ÷ 60%	40 ÷ 60%
Transport and storage temperature		–20 ÷ +50 °C	–20 ÷ +50 °C	–20 ÷ +50 °C
Weighing pan dimensions		ø 24 mm	ø 24 mm	ø 50 mm
Mass comparator dimensions**		625 × 390 × 280 mm	625 × 390 × 280 mm	625 × 390 × 280 mm
Indicator dimensions**		206 × 140 × 71 mm	206 × 140 × 71 mm	206 × 140 × 71 mm
Anti-draft chamber dimensions**		665 × 560 × 340 mm	665 × 560 × 340 mm	665 × 560 × 340 mm
Mass comparator net weight		55 kg	55 kg	36 kg
Mass comparator gross weight		45 kg	45 kg	46 kg
Anti-draft chamber net weight		15.8 kg	15.8 kg	15.8 kg
Anti-draft chamber gross weight		25.8 kg	25.8 kg	25.8 kg
Mass comparator packaging dimensions**		870 × 800 × 560 mm	870 × 800 × 560 mm	870 × 800 × 560 mm
Anti-draft chamber packaging dimensions**		950 × 830 × 630 mm	950 × 830 × 630 mm	950 × 830 × 630 mm

* repeatability is expressed as a standard deviation determined for 6 ABBA cycles

** dimensions: length x width x depth

*** non-condensing conditions

Wi-Fi ® is a registered trademark of Wi-Fi Alliance.

Technical Specifications

		AK-4/1001	AK-4/2000	AK-4/5000
OIML calibration range E1		100 g ÷ 1 kg	200 g ÷ 2 kg	1 kg ÷ 5 kg
OIML calibration range E2		100 g ÷ 1 kg	200 g ÷ 2 kg	1 kg ÷ 5 kg
OIML calibration range F1		100 g ÷ 1 kg	200 g ÷ 2 kg	1 kg ÷ 5 kg
OIML calibration range F2		100 g ÷ 1 kg	200 g ÷ 2 kg	1 kg ÷ 5 kg
OIML calibration range M1		—	—	—
OIML calibration range M2		—	—	—
Maximum capacity [Max]		1.02 kg	2.05 kg	5.05 kg
Readability [d]		0.001 mg	0.01 mg	0.01 mg
Standard repeatability [5% Max]*		1.7 µg	12 µg	15 µg
Standard repeatability [Max] *		2 µg	15 µg	20 µg
Permissible repeatability *		3.5 µg	25 µg	35 µg
Stabilization time		30 s	30 s	30 s
Adjustment		external	external	external
Electric compensation range		– 1 g ÷ 10 g	– 10 g ÷ 50 g	– 10 g ÷ 50 g
Internal supplementary weights		semi-automatic	semi-automatic	semi-automatic
Eccentricity (for test weight)		0 mg	0 mg	0 mg
Magazine positions		4 positions	4 positions	4 positions
Display		5.7" colour resistive touch screen	5.7" colour resistive touch screen	5.7" colour resistive touch screen
Keypad		8 keys	8 keys	8 keys
Ingress protection - indicator		IP 43	IP 43	IP 43
Touch-free operation		2 programmable sensors	2 programmable sensors	2 programmable sensors
USB-A		2	2	2
Ethernet		10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
RS 232		2	2	2
Wi-Fi®		802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
IN/OUT		4 × IN, 4 × OUT	4 × IN, 4 × OUT	4 × IN, 4 × OUT
Power supply		110 ÷ 230 V AC / 50 ÷ 60 Hz	110 ÷ 230 V AC / 50 ÷ 60 Hz	110 ÷ 230 V AC / 50 ÷ 60 Hz
Operating temperature		+15 ÷ +30 °C	+15 ÷ +30 °C	+15 ÷ +30 °C
Operating temperature change rate		± 0.5 °C / 12 h (± 0.3 °C / 4 h)	± 0.5 °C / 12 h (± 0.3 °C / 4 h)	± 0.5 °C / 12 h (± 0.3 °C / 4 h)
Relative humidity variations		±5% / 12 h (± 3% / 4 h)	±5% / 12 h (± 3% / 4 h)	±5% / 12 h (± 3% / 4 h)
Relative humidity***		40 ÷ 60%	40 ÷ 60%	40 ÷ 60%
Transport and storage temperature		–20 ÷ +50 °C	–20 ÷ +50 °C	–20 ÷ +50 °C
Weighing pan dimensions		ø 50 mm	ø 75 mm	ø 75 mm
Mass comparator dimensions**		625 × 390 × 280 mm	670 × 395 × 353 mm	670 × 395 × 353 mm
Indicator dimensions**		206 × 140 × 71 mm	206 × 140 × 71 mm	206 × 140 × 71 mm
Anti-draft chamber dimensions**		665 × 560 × 340 mm	700 × 660 × 470 mm	700 × 660 × 470 mm
Mass comparator net weight		36 kg	44 kg	46 kg
Mass comparator gross weight		46 kg	58.5 kg	60.5 kg
Anti-draft chamber net weight		15.8 kg	24 kg	24 kg
Anti-draft chamber gross weight		25.8 kg	36.5 kg	36.5 kg
Mass comparator packaging dimensions**		870 × 800 × 560 mm	1000 × 900 × 670 mm	1000 × 900 × 670 mm
Anti-draft chamber packaging dimensions**		950 × 830 × 630 mm	990 × 930 × 760 mm	990 × 930 × 760 mm

* repeatability is expressed as a standard deviation determined for 6 ABBA cycles

** dimensions: length x width x depth

*** non-condensing conditions

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Technical Specifications

		AK-4/5000.1	AK-4/10000	AK-4/16000
OIML calibration range E1		1 kg ÷ 5 kg	1 kg ÷ 10 kg	2 kg ÷ 10 kg
OIML calibration range E2		1 kg ÷ 5 kg	1 kg ÷ 10 kg	1 kg ÷ 10 kg
OIML calibration range F1		1 kg ÷ 5 kg	1 kg ÷ 10 kg	1 kg ÷ 10 kg
OIML calibration range F2		1 kg ÷ 5 kg	1 kg ÷ 10 kg	1 kg ÷ 10 kg
OIML calibration range M1		—	—	—
OIML calibration range M2		—	—	—
Maximum capacity [Max]		5.05 kg	10.02 kg	16.3 kg
Readability [d]		0.1 mg	0.01 mg	0.1 mg
Standard repeatability [5% Max]*		80 µg	15 µg	0.1 mg
Standard repeatability [Max] *		100 µg	20 µg	0.2 mg
Permissible repeatability *		150 µg	40 µg	0.35 mg
Stabilization time		30 s	30 s	25 s
Adjustment		external	external	internal (200g)
Electric compensation range		– 10 g ÷ 50 g	– 10 g ÷ 50 g	– 10 g ÷ 300 g
Internal supplementary weights		semi-automatic	semi-automatic	—
External supplementary weights		—	—	4 × 0.25 kg; 2 × 0.5 kg; 3 × 2 kg; 2 × 4 kg; 2 × 8 kg
Eccentricity (for test weight)		0 mg	0 mg	0 mg
Magazine positions		4 positions	4 positions	4 positions
Display		5.7" colour resistive touch screen	5.7" colour resistive touch screen	5.7" colour resistive touch screen
Keypad		8 keys	8 keys	8 keys
Ingress protection - indicator		IP 43	IP 43	IP 43
Touch-free operation		2 programmable sensors	2 programmable sensors	2 programmable sensors
USB-A		2	2	2
Ethernet		10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
RS 232		2	2	2
Wi-Fi®		802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
IN/OUT		4 × IN, 4 × OUT	4 × IN, 4 × OUT	4 × IN, 4 × OUT
Power supply		110 ÷ 230 V AC / 50 ÷ 60 Hz	110 ÷ 230 V AC / 50 ÷ 60 Hz	110 ÷ 230 V AC / 50 ÷ 60 Hz
Operating temperature		+15 ÷ +30 °C	+15 ÷ +30 °C	+15 ÷ +30 °C
Operating temperature change rate		± 0.5 °C / 12 h (± 0.3 °C / 4 h)	± 0.5 °C / 12 h (± 0.3 °C / 4 h)	± 0.5 °C / 12 h (± 0.3 °C / 4 h)
Relative humidity variations		±5% / 12 h (± 3% / 4 h)	±5% / 12 h (± 3% / 4 h)	±5% / 12 h (± 3% / 4 h)
Relative humidity***		40 ÷ 60%	40 ÷ 60%	40 ÷ 60%
Transport and storage temperature		–20 ÷ +50 °C	–20 ÷ +50 °C	–20 ÷ +50 °C
Weighing pan dimensions		ø 75 mm	ø 100 mm	ø 350 mm
Mass comparator dimensions**		670 × 395 × 353 mm	930 × 800 × 535 mm	1200 × 1200 × 1400 mm
Indicator dimensions**		206 × 140 × 71 mm	206 × 140 × 71 mm	206 × 140 × 71 mm
Anti-draft chamber dimensions**		700 × 660 × 470 mm	930 × 800 × 535 mm	—
Mass comparator net weight		46 kg	157 kg	270 kg
Mass comparator gross weight		60.5 kg	183 kg	282 kg
Anti-draft chamber net weight****		24 kg	26 kg	—
Anti-draft chamber gross weight****		36.5 kg	41 kg	—
Mass comparator packaging dimensions**		1000 × 900 × 670 mm	1200 × 800 × 1250 mm	1500 × 1500 × 1700 mm
Anti-draft chamber packaging dimensions**		990 × 930 × 760 mm	1100 × 800 × 1150 mm	—

* repeatability is expressed as a standard deviation determined for 6 ABBA cycles

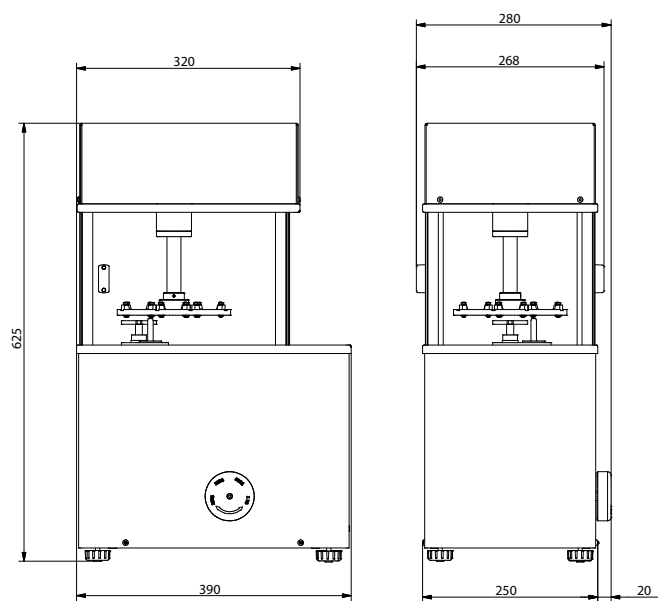
** dimensions: length x width x depth

*** non-condensing conditions

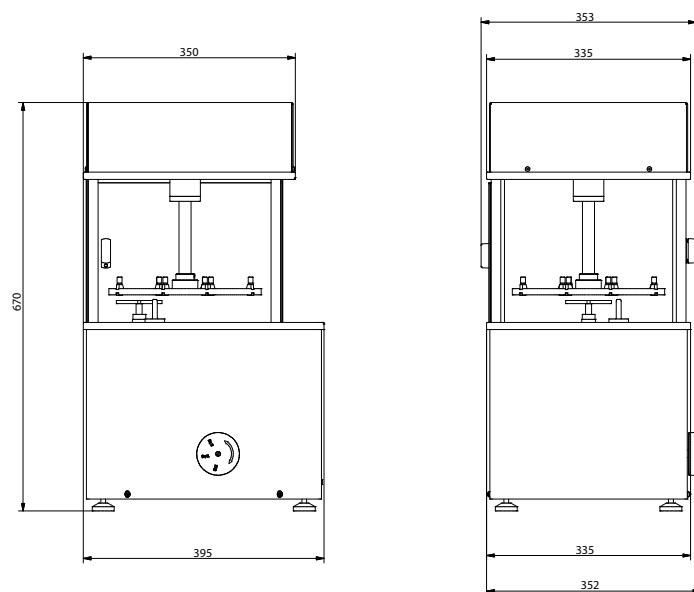
**** the anti-draft chamber is disassembled for transport and sent separately

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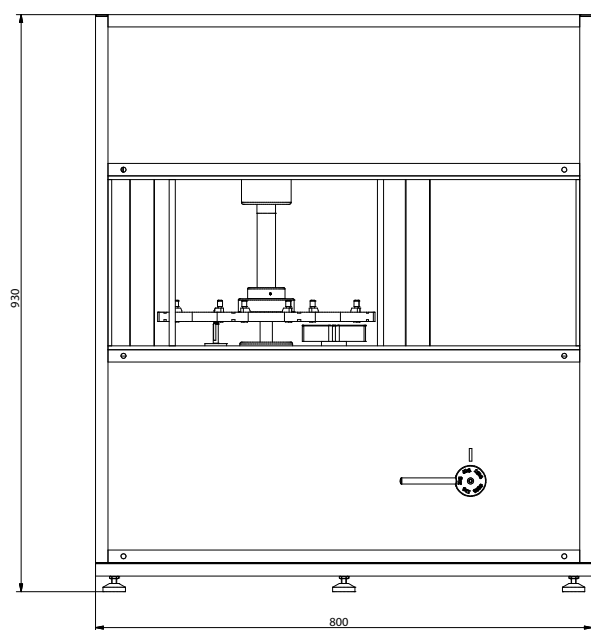
Dimensions



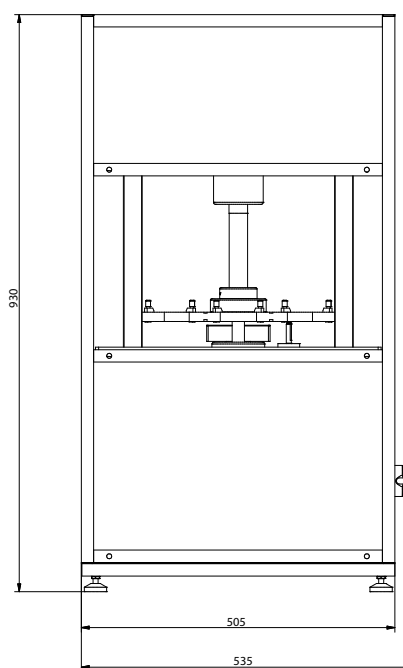
AK-4/100, AK-4/1000,
AK-4/1000.1



AK-4/2000, AK-4/5000,
AK-4/5000.1



AK-4/10000, AK-4/16000



Accessories

Weighing Tables

- granite anti-vibration table

Ambient Conditions

- THB-S or THB-P sensor

Peripheral Devices

- Epson dot matrix printer
- barcode scanner

Cables, Converters

- RS-232 – P0108 computer cable
- RS-232 – P0167 computer cable
- RS-232 – P0151 Epson printer cable

Electrical Accessories

- power supply with ZR-02 battery

Anti-Draft Chambers

- WAY-AK-SK-00 anti-draft chamber
- WAY-AK5-SK-00 anti-draft chamber

Dedicated Software

RMCS System

- performance of calibration procedures in a laboratory from the moment the order is placed, to the moment of issuing a calibration certificate
- compatible with THB sensors enabling recording ambient conditions
- export of report results to various files
- archiving calibration protocols, orders, certificates and ambient conditions

RADWAG Remote Desktop

- remote control of the mass comparator using computer, telephone or tablet
- sending text messages
- version for Windows 10 and Android systems

R-LAB

- collecting measurements
- carrying out statistical analysis of measurements
- customized graphs and reports

Parameters Editor

- remote change of parameters
- remote on-line preview of the display
- displaying current mass indication
- software update
- file loading, editing and saving parameters to a file
- import and export of parameters
- interfaces: RS232, Ethernet and Wireless Connection
- quick and easy edition of balance parameters using computer