

Operating Instructions

METTLER Analytical balance AE240 Dual Range Balance

METTLER TOLEDO



Leveling the balance	Weighting range selection	Calibrating the balance	Integration time	Stability detector
	Weighting range selection Weighing range: 41 g Readability: 0.01 mg 0.1 mg	Calibrating the balance 100.0000 g Internal	Integration time Steps 1/2/3	Stability detector Steps 1/2/Off
	Switching the display on 1. Press the power button. 2. Press the mode button. 3. Press the mode button again.	Switching the display on 1. Press the power button. 2. Press the mode button. 3. Press the mode button again.	Switching the display on 1. Press the power button. 2. Press the mode button. 3. Press the mode button again.	Switching the display on 1. Press the power button. 2. Press the mode button. 3. Press the mode button again.
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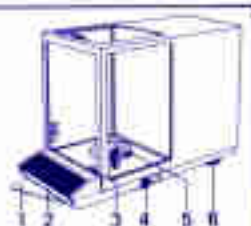
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METTLER AE240 Dual Range Balance

Operating elements and connections

- 1 Brief Operating Instructions
- 2 Single control bar
- 3 Level indicator
- 4 Calibration lever
- 5 Weighing pan / windshield ring
- 6 Leveling screw



- 10 Voltage selector
- 11 Microfuse
- 12 Power line connection socket
- 13 Socket for handkey / foot pedal



Preliminary steps

Checking the operating voltage

The operating voltage setting must agree with your local power-line voltage; please check this setting and, if needed, change it.

Admissible power-line voltage in the switch positions:
115 V: 92 V...132 V
220 V: 184 V...265 V

Location

- A stable location, as free from vibration as possible.
- Make sure there are no large temperature fluctuations.
- Avoid direct sunlight and drafts.
- Connect the power cable of the work station.

Installing the weighing pan and the windshield ring; leveling the balance

- Place weighing pan on balance; the control peg centers the pan in the opening in the base of the weighing chamber.
- The two leveling screws should be adjusted so that the bubble is in the middle of the circle.

Whenever the location of the balance is changed, the balance should be leveled.

Operation

Short-form operating instructions

Short-form operating instructions can be found on a card that swings out from underneath the balance housing.

Switching the display on/off

- Briefly press the single control bar; all display segments light up for several seconds:

8.8.8.8.8.8.8.8.

- Afterwards, the display automatically sets itself to zero.
- Lightly lift the control bar; the display is switched off.

Weighing range selection

- Press control bar until "rng" appears. ("rng" range)
- Releasing the control bar and pressing it again briefly, permits to alternate between the 40 g and the 200 g ranges.

After the desired range has been selected wait for: Display — followed by zero. Balance is now in weighing mode.

Calibration

Make absolutely sure:
The balance must be left connected to the power supply for at least 60 minutes before "calibrating". For calibration it is of no consequence whichever weighing range has been selected. Calibration is being performed for both weighing ranges simultaneously.

- Press and hold the single control bar until "CAL" appears in the display, then release control bar. The display changes to "CAL", then to "CAL 100 (cents)".
- Move calibration lever all the way to the rear; the display changes to "CAL", followed by "100.000", then to "CAL 0 (cents)".
- Move calibration lever all the way back towards the front of the balance; the display changes to "—", followed by zero.

Note: After selecting the weighing range, "calibration", "integration time" or "stability check" can be selected by extended pressing of the control bar.

Measuring cycle / measuring accuracy

By selecting a particular integration cycle, as well as a particular stability detection step, the balance can be configured according to your weighing location and needs.

Integration time:

- Step 1: Used for very stable, vibration-free weighing table (short measuring cycle).
 - Step 2: Normal setting.
 - Step 3: Used for unfavorable ambient conditions (long measuring cycle).
- Press the control bar and hold it until "sp" appears in the display, then release the control bar.
 - Immediately press the control bar briefly; the display will change to the next step.
 - Stop at the step you wish to use and wait for the display to return to the weighing mode (zero).

Stability detector:

- Step 1: Great sensitivity (long pause before data are released).
 - Step 2: Less sensitivity (short pause before data are released).
 - Normal setting.
- The stability detector is switched off. Please note that when this is the case, DeltaDisplay is also switched off (described in Paragraph entitled, "Weighing in").
- Press the control bar and hold until "Add" appears in the display, then release control bar.
 - Immediately press control bar again briefly; the display changes to the next step.
 - Stop at the step you wish to use and wait for the display to return to the weighing mode (zero).

Note: After selecting the integration time, you can go directly to the selection of the stability detector setting by holding the control bar down.

Taring

- Open the sliding glass door.
- Place a tare container on the weighing pan.
- Close the sliding glass door.
- Press the control bar briefly; the display changes to zero.

Note: It is possible to carry out external taring by using the handkey or foot pedal from the "accessories, optional" (connection sockets on rear of balance).

The weight of the container is now tared out. To weigh in, the balance weighing range — minus the weight of the tare container — is now available.

Weighing in (A5e 1 or 2)

- Open the sliding glass door.
- Fill in substance up to the desired target weight (to read the weight accurately, the door must be closed).

If different components are to be weighed, one after the other, into the same container, it is possible to tare after each weighing and start the next weighing from zero. This can be done until the tare container and all the components together reach the end of the weighing range.

DeltaDisplay



The DeltaDisplay switches on automatically when weighing in substances quickly; the last two digits are blanked out and the display change sequence speeds up. This allows the increase in weight to be followed better. When weighing in slowly towards the target weight, the two digits switch back on. The display change sequence remains rapid. Only when weight changes are very small does the balance switch back to the normal display change with the full number of decimal places.

Stability detector:

When stability is achieved (determined by the step selected for the stability detector), the green dot in the display goes out.

The result is then stable.

Note: When the green dot lights up in the display, the data interface is blocked; when the green dot goes out (stability), the data interface is unlocked.

Further capabilities

- 20 Cover
- 21 Screw
- 22 Hook



GD hanger (for weighing below the balance)

- Open all sliding glass doors.
- Remove the weighing pan.
- Place the balance on its back.
- Loosen the screw on the bottom of the balance.
- Swing the cover to one side.
- Retighten the screw.

A hook is visible in the opening; the object or substance can be weighed by attaching a hanger from this hook.

- Place the balance back on its feet, place the weighing pan back on and level the balance.

- With the hanger attached to the hook, press tare.

Note: The weighing pan does not have to be placed back on if the hanger is at least as heavy as the pan. The hanger is not available from METTLER!

Care and maintenance

Cleaning

A cloth with some soapy water is sufficient to clean the weighing pan and housing. Do not use any strong solvents. To remove residues from the weighing chamber, use the small artist's brush that is included in the balance standard equipment (do not blow air through the chamber).

Replacing the microfuse

- Disconnect the power cable.
- Turn out the fuse holder (in the power-line connection socket) with a screwdriver.
- Replace the fuse (spare fuse in the fuse holder).
- Place the fuse holder back on.
- Plug the power-line cable back in.

Accessories

Optional equipment	Order No.
- Windshield ring, can be stacked, 1 unit	38594
- Tweezers, 210 mm long (with plastic tips)	70208
- Density (specific gravity) determination kit	33340
- Foot pedal	48378
- Handkey	43500
- Microfuses, 160 mA slow-blowing (set of 3)	55144
- Data interfaces:	
011 Option - CL/RS232C unidirectional	38750
012 Option - CL/RS232C bidirectional	38751
013 Option - IEEE488	38752
040 Data Output (unidirectional mode)	38795

Standard equipment

- Power-line cable	neutral	87578
	Switzerland	87920
	Germany	87925
	USA	88688
- Weighing pan, 80 mm dia.		38590
- Centering disk (for windshield ring)		38609
- Hair-bristle brush		70114
- Windshield ring		38688

Specifications

AE240 Dual Range Balance	
40 g range	200 g range
Readability	0.01 mg
Weighing range	0...41 g
Tare range (subtractive)	0...41 g
Reproducibility (standard deviation)	0.02 mg
Linearity	± 0.03 mg
Stabilization time (typical)	8 sec
Integration time (adjustable)	5/6/12 sec
Display sequence	- Mettler DeltaDisplay off - Mettler DeltaDisplay on
Stability detector	- Sensitivity selectable in three steps
Sensitivity drift (10...30°C)	± 2 x 10 ⁻⁶ / °C
Calibration weight (built-in), adjusted to an apparent mass of 8.0 g/cm ³ at an air density of 1.200 mg/l	100 g, adjusted to ± 0.1 mg
Dimensions:	Weighting pan (stainless steel) Open space above weighing pan Balance housing (W x D x H) Net weight
Power supply:	Voltage, adjustable Admissible voltage range Frequency Power consumption
Admissible ambient conditions during operation:	Temperature Relative humidity (non-condensing)

What's wrong if...

- the entire display does not light up?

- the Off display appears?

- only the upper horizontal segments light up in the display?

- only the lower horizontal segments light up in the display?

- the weighing result is unstable?

- the weighing result is obviously incorrect?

- only a portion of the display lights up?

- the middle horizontal segments in the display are blinking (for more than 30 sec)?

- CAL Err appears in the display?

- no CAL appears in the display?

- a zero display does not appear after pressing tare?

then ...

- no power reaching the instrument.
- the fuse is defective.
- a temporary power failure has taken place. (Press the control bar.)
- the weighing range has been exceeded.
- the calibration weight has been activated.
- there was weight on the pan when the instrument was switched on.
- the weighing pan is not installed.
- there was weight on the pan when the instrument was switched on.
- there are too many drafts.
- the weighing table is unstable.
- the integration time setting is too low.
- the object being weighed is not at room temperature.
- the balance must be calibrated or has been calibrated using the wrong external weight.
- a temporary malfunction has occurred (pull out power cable and plug it back in).
- the weighing table or the load is too unsteady (close sliding glass doors, set a longer integration time and/or change the stability detection setting).
- the weighing pan was not unloaded before calibrating the balance, or the wrong external calibration weight was used (return to the weighing mode by pressing and holding the control bar).
- a temporary malfunction has occurred (recalibrate balance).
- the weighing table or the load is too unsteady (close sliding glass doors, set a longer integration time and/or change the stability detection setting).