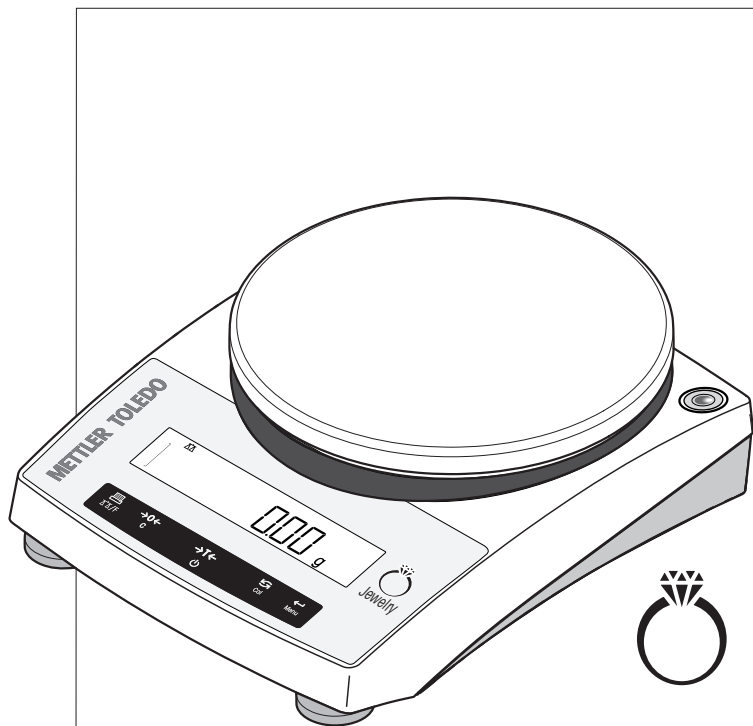


Jewelry Balances

JL-GE



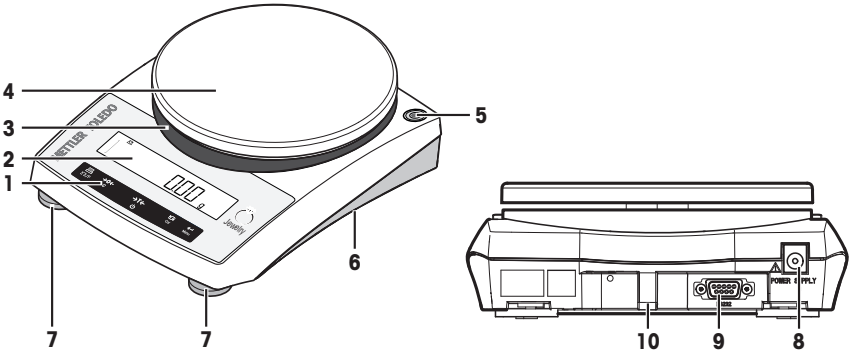
METTLER TOLEDO



► www.mt.com/jl-ge-OI

► www.mt.com/library

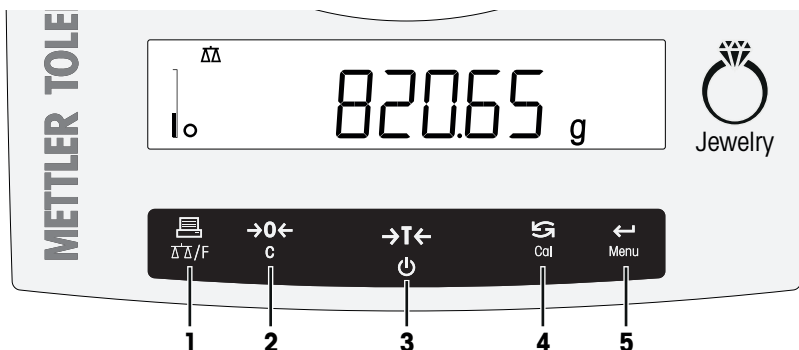
Overview components








Components overview legend

1	Operation keys	2	Display
3	Adapter ring	4	Weighing pan
5	Level indicator	6	Bottom of balance: <ul style="list-style-type: none">• Battery compartment• Hanger opening for weighing below the balance
7	Leveling feet	8	Socket for AC/DC Adapter
9	RS232C serial interface	10	Lug for optional anti-theft device

Overview operation keys



Terminal keys legend

No.	Key	Press briefly (less than 1.5 s)	Press and hold (longer than 1.5 s)
1	 ΔΔ/F	<ul style="list-style-type: none"> Printout display value Transmit data To navigate backward in the menu or menu selection Decrease parameters in menu or applications 	<ul style="list-style-type: none"> Open the application list and scroll among the weighing applications in certain sequence for selecting an application Exits an active application and returns to the selection for weighing mode
2	 C	<ul style="list-style-type: none"> Zero setting 	<ul style="list-style-type: none"> Cancel and leave menu without saving One step back in the menu Cancel or leave application setting
3	 T Power	<ul style="list-style-type: none"> Tare Switch on 	<ul style="list-style-type: none"> Switch off
4	 Cal	<ul style="list-style-type: none"> With entries, scroll down To navigate forward menu topics or menu selections To toggle between unit 1, recall value (if selected), unit 2 (if different from unit 1) and the application unit (if any) Increase parameters in menu or applications 	<ul style="list-style-type: none"> Execute predefined adjustment (calibration) procedure
5	 Menu	<ul style="list-style-type: none"> Enter or leave menu selection To enter application parameter and switch to next parameter To store parameter 	<ul style="list-style-type: none"> Enter or leave menu (parameter settings)

1 Safety Information

Two documents named "User Manual" and "Operating Instructions" are available for this instrument.

- The User Manual shows you how to start using the instrument.
- The Operating Instructions contain a full description of the instrument and its use.
- Keep both documents for future reference.
- Include both documents if you transfer the instrument to other parties.

Only use the instrument according to the User Manual and the Operating Instructions. If you do not use the instrument according to these documents or if the instrument is modified, the safety of the instrument may be impaired and Mettler-Toledo GmbH assumes no liability.



Additional information about this balance can be found in the Operating Instructions on the CD-ROM or online.

► www.mt.com/jl-ge-OI

1.1 Definitions of signal words and warning symbols

Safety notes contain important information on safety issues. Ignoring the safety notes may lead to personal injury, damage to the instrument, malfunctions and false results. Safety notes are marked with the following signal words and warning symbols:

Signal words

WARNING	A hazardous situation with medium risk, possibly resulting in death or severe injury if not avoided.
CAUTION	A hazardous situation with low risk, resulting in minor or moderate injury if not avoided.
NOTICE	A hazardous situation with low risk, resulting in damage to the instrument, other material damage, malfunctions and erroneous results, or loss of data.

Warning symbols



Electrical shock



General hazard: read the Operating Instructions for information about the hazards and the resulting measures.

1.2 Product specific safety notes

Intended use

This instrument is designed to be used in laboratories by trained staff. The instrument is intended for weighing purposes.

Any other type of use and operation beyond the limits of technical specifications without written consent from Mettler-Toledo GmbH is considered as not intended.

Responsibilities of the instrument owner

The instrument owner is the person holding the legal title to the instrument and who uses the instrument or authorizes any person to use it, or the person who is deemed by law to be the operator of the instrument. The instrument owner is responsible for the safety of all users of the instrument and third parties.

METTLER TOLEDO assumes that the instrument owner trains users to safely use the instrument in their workplace and deal with potential hazards. METTLER TOLEDO assumes that the instrument owner provides the necessary protective gear.

Safety notes



WARNING

Danger of death or serious injury due to electric shock!

Contact with parts that carry a live current can lead to death or injury.

- 1 Only use the METTLER TOLEDO power supply cable and AC/DC adapter designed for your instrument.
- 2 Connect the power cable to a grounded power outlet.
- 3 Keep all electrical cables and connections away from liquids and moisture.
- 4 Check the cables and power plug for damage and replace damaged cables and power plugs.



NOTICE

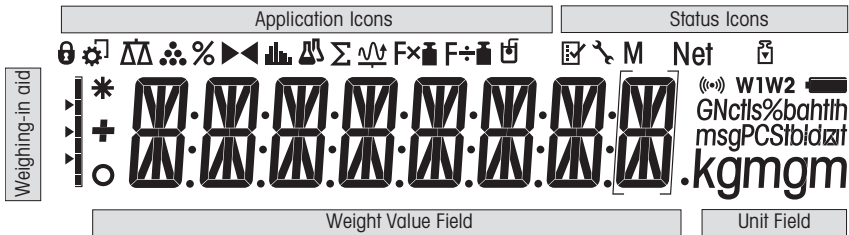
Risk of damage to the instrument due to the use of unsuitable parts!

Using unsuitable parts with the instrument can damage the Instrument or cause it to malfunction.

- Only use parts from METTLER TOLEDO that are intended to be used with your instrument.

2 Design and Function









2.1 Display




Application icons			
	Application weighing		Application totaling
	Application piece counting		Application multiplication factor
	Application percent weighing		Application division factor
	Application check weighing		Menu locked
	Application statistics		

While an application is running, the corresponding application icon appears at the top of the display.

Status icons			
	Indicates stored value (Memory)		Feedback for pressed keys
	Indicates net weight values		Service reminder
	Adjustments (calibration) started		

Weight value field and weighing-in aid			
	Brackets to indicate uncertified digits (approved models only)		SmartTrack (weighing-in aid) shows how much of the entire weighing range has been used.
	Indicates negative values		Marking of nominal or target weight
	Indicates unstable values		Marking of tolerance limit T+
	Indicates calculated values		Marking of tolerance limit T-

Unit field						
	g	gram	ozt	troy ounce	tls	Singapore taels
	kg	kilogram	GN	grain	tit	Taiwan taels
	mg	milligram	dwt	pennyweight	tola	tola
	ct	carat	mom	momme	baht	baht
	lb	pound	msg	mesghal		
	oz	ounce	tlh	Hong Kong taels		

3 Installation and Putting into Operation

Finding more information



Additional information about this balance can be found in the Operating Instructions on the CD-ROM or online.

► www.mt.com/jl-ge-OI

Search for documents.

► www.mt.com/library



WARNING

Danger of death or serious injury due to electric shock!

The instrument must be disconnected from the power supply before performing all setup and assembly work.

3.1 Unpacking and delivery inspection



NOTICE

Risk of damage to the instrument due to the use of unsuitable parts!

Using unsuitable parts with the instrument can damage the Instrument or cause it to malfunction.

- Only use parts from METTLER TOLEDO that are intended to be used with your instrument.

- 1 Open the packaging and carefully remove all components.
- 2 Check the delivered items.

The standard scope of delivery contains the following items

- Balance
- Weighing pan and weighing pan support
- Protective cover for load cell cone (mounted)

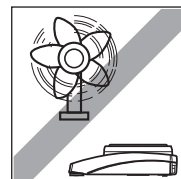
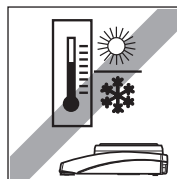
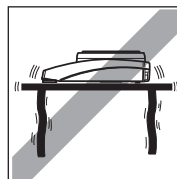
- Protective cover (mounted)
- Stackable cover
- Universal AC/DC adapter (country specific)
- Operating Instructions or User Manual; printed or on CD-ROM, depending on country of use
- Declaration of conformity

3.2 Selecting the location

A good location will enable the balance to work accurately and reliably. The surface must be able to safely take the weight of the balance when fully loaded. The following local conditions must be observed:

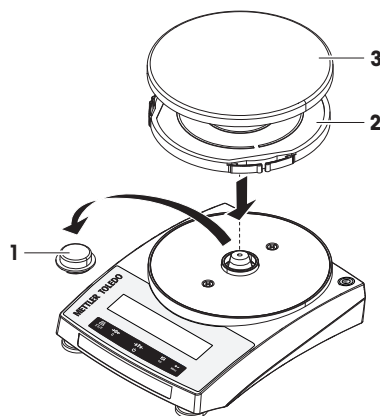
If the balance is not horizontal at the outset, it must be leveled during commissioning.

- Operate the balance in indoor environments only and at an altitude of less than 4000 m above sea level.
- Before switching on the balance, leave the parts to reach room temperature (+5 to 40°C). Ensure that the relative humidity is between 10% and 80% and non-condensing conditions are met.
- The power plug must be easily accessible.
- No powerful vibrations
- No direct sunlight
- No excessive temperature fluctuations.
- No powerful drafts.
- No powerful electric or magnetic fields
- Ensure that the surroundings are free from dust as possible.



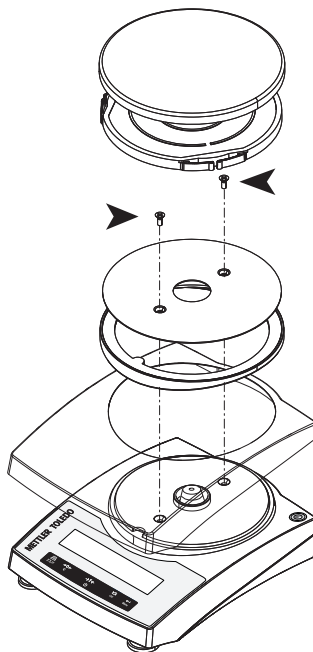
3.3 Installing the components

- 1 Remove the protective cover for weighing cone (1). Keep it for later use.
- 2 Place the following components on the balance in the specified order:
 - Pan support (2)
 - Weighing pan (3)



3.4 Installation of the protective cover

- Install the protective cover according to the illustration, using a screwdriver.



3.5 Connecting the balance



WARNING

Danger of death or serious injury due to electric shock!

Contact with parts that carry a live current can lead to death or injury.

- 1 Only use the METTLER TOLEDO power supply cable and AC/DC adapter designed for your instrument.
- 2 Connect the power cable to a grounded power outlet.
- 3 Keep all electrical cables and connections away from liquids and moisture.
- 4 Check the cables and power plug for damage and replace damaged cables and power plugs.



NOTICE

Danger of damage to the AC/DC adapter due to overheating!

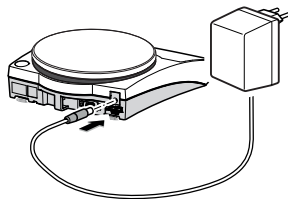
If the AC/DC adapter is covered or in a container, it is not sufficiently cooled and will overheat.

- 1 Do not cover the AC/DC adapter.
- 2 Do not put the AC/DC adapter in a container.

The balance is supplied with an universal AC/DC adapter.

- Install the cables so that they cannot be damaged or interfere with operation.
- Insert the power cable in a grounded power outlet that is easily accessible.

- Connect the AC/DC adapter to the connection socket on the back of your balance (see figure) and to the power line.
- ⇒ The balance is ready for use.



3.5.1 Battery operation

The balance can also operate with batteries. Under normal operation conditions, the balance works independently of the AC power line for about 8 to 15 hours (using alkaline batteries).

It is also possible to use rechargeable batteries. Charging batteries inside the balance is **not** possible.

Your balance uses 4 standard AA (LR6) batteries (alkaline batteries preferred).

Inserting / replacing batteries



WARNING

Danger of death or serious injury due to electric shock!

Contact with parts that contain a live current can lead to injury and death.

- Disconnect the instrument from the power supply when replacing batteries.



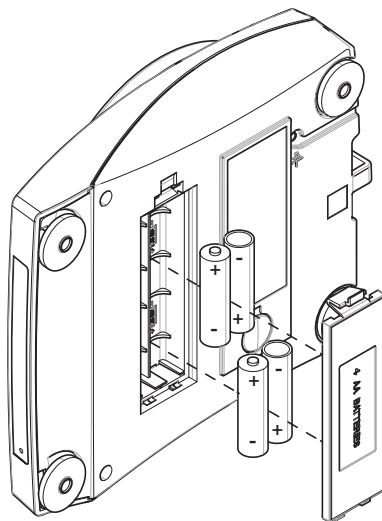
NOTICE

Risk of damage to the balance

Do not place the balance on the pan support location bolt.

- Read and follow all warnings and instructions supplied by the battery manufacturer.
 - Do not mix different types or brands of batteries. Performance of batteries varies depending on the manufacturer.
 - Remove the batteries from the balance if the balance is not used for a long period of time.
 - Batteries must be disposed of properly, according to local regulations.
 - Make sure that the balance is off before removing or inserting batteries.
- 1 Remove weighing pan and pan support.
 - 2 Turn the balance carefully on its side.

- 3 Open and remove the battery-chamber cover.
- 4 Insert / replace the batteries with the correct polarity as shown in the battery holder.
- 5 Insert and close the battery-chamber cover.
- 6 Turn the balance carefully to its normal position.
- 7 Reinstall all components in the reverse order.




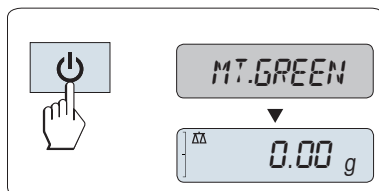
3.6 Setting up the balance

3.6.1 Switching on the balance


Before using the balance, it must be warmed up in order to obtain accurate weighing results. To reach operating temperature, the balance must be acclimatized and connected to the power supply for at least 30 minutes.

Mains operated (standby mode)

- The balance is connected to the power supply.
- Press .
 - ⇒ The balance performs a display test. All segments in the display light up briefly, **WELCOME**, Software version, **Maximum load** and **Readability** appears briefly.
 - ⇒ The balance is ready for weighing or for operation with the last active application.



Battery operated

- 1 Remove any load from weighing pan.
- 2 Press .
 - ⇒ The balance performs a display test (all segments in the display light up briefly), **WELCOME**, Software version, **Maximum load** and **Readability** appears briefly.
 - ⇒ After the warm-up time, the balance is ready for weighing or for operation with the last active application.

Legal-for-trade

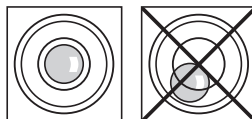
Approved balances will execute an initial zero.

3.6.2 Leveling the balance

The balances have a level indicator and two or four adjustable leveling feet to compensate for slight irregularities in the surface of the weighing bench. The balance is exactly horizontal when the air bubble is in the middle of the level glass.

The balance must be leveled and adjusted each time it is moved to a new location.

- 1 Align the balance horizontally.
- 2 Turning the leveling feet of the balance housing until the air bubble is in the inner circle of the level indicator.



3.6.3 Adjusting the balance

To obtain accurate weighing results, the balance must be adjusted to match the gravitational acceleration at its location and depending on the ambient conditions. After reaching the operation temperature, adjusting is necessary.

- before the balance is used for the first time.
- after a change of the location.
- at regular intervals during weighing service.

See also

Adjustment with external weight ► Page 13

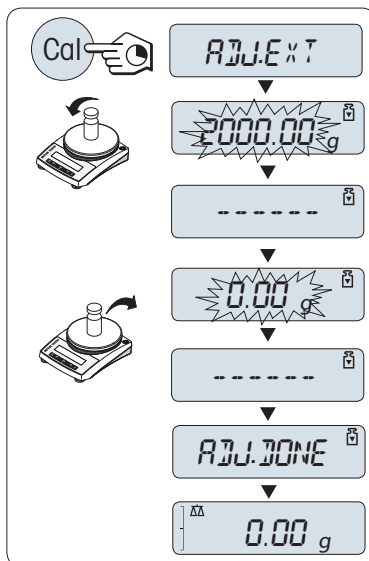
3.7 Adjustment with external weight

Legal-for-trade

Approved models must be adjusted at the place of operation. Before putting in operation, and depending on particular country certification legislation, the balance will then have to be checked and sealed by authorized personnel. See the detailed information delivered with this balance.

- In the menu topic **CAL** (Adjustment) of advanced menu **ADJ.EXT** must be selected.
- Required adjustment weight is ready.
- Weighing pan is unloaded.

- 1 Press and hold **CAL** to execute external adjustment.
 - ⇒ The required (predefined) adjustment weight value flashes on the display.
 - 2 Place adjustment weight in center of pan.
 - ⇒ The balance adjusts itself automatically.
 - 3 Remove adjustment weight, when **0.00 g** flashes.
- ⇒ The adjusting is finished when the message **ADJ DONE** appears briefly on the display. The balance returns to the last active application and is ready for operation.



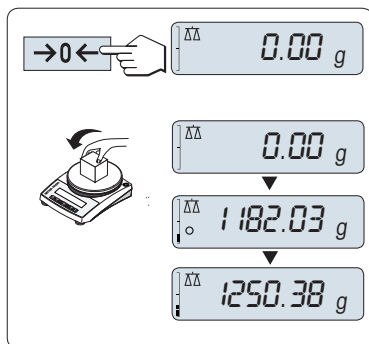
3.8 Performing a simple weighing



The weighing application allows you to perform simple weighings and how you can accelerate the weighing process.

If your balance is not in the weighing mode, press and hold the $\Delta\Delta$ key down until **WEIGH** appears in the display. Press \leftarrow . Your balance is in the weighing mode.

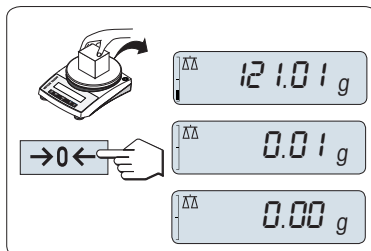
- 1 Press $\rightarrow 0 \leftarrow$ to zero the balance.
- 2 Place the sample on the weighing pan.
- 3 Wait until the instability detector \circ disappears and the stability beep sounds.
- 4 Read the result.



Zeroing

Use the $\rightarrow 0 \leftarrow$ zeroing key before you start with a weighing.

- 1 Unload the balance.
- 2 Press $\rightarrow 0 \leftarrow$ to zero the balance.
 - ⇒ All weight values are measured in relation to this zero point.

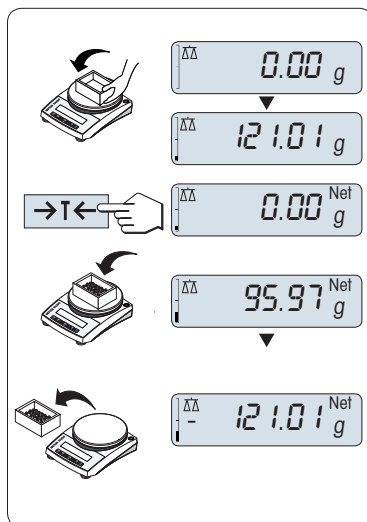


Taring

If you are working with a weighing container, first set the balance to zero.

- 1 Place empty container on the weighing pan.
⇒ The weight is displayed.
- 2 Press **→T←** to tare the balance.
⇒ **0.00 g** and **Net** appears in the display. **Net** indicates that all weight values displayed are net values.
- 3 Place the sample in the container.
⇒ The result appears in the display.

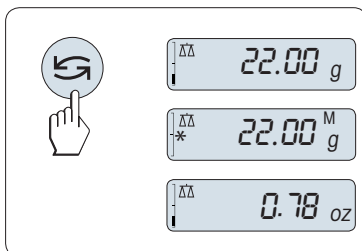
If the container is removed from the balance, the tare weight will be shown as a negative value.



Switching weight units

The **↺↻** key can be used at any time to toggle between weight unit **UNIT 1**, **RECALL** value (if selected) and weight unit **UNIT 2** (if different from weight unit 1) and the application unit (if any).


- Press **↺↻** to set weight unit or recall value.

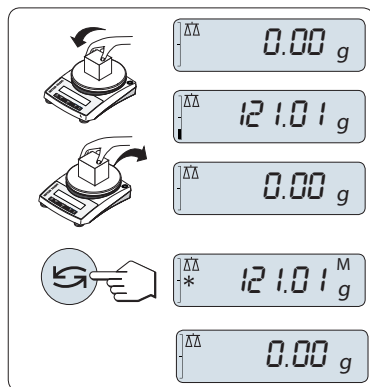


Recall / recall weight value

Recall stores stable weights with an absolute display value bigger than 10d.

- Function **RECALL** is in the menu activated.

- 1 Load weighing sample.
⇒ The display shows weight value and stores stable value.
- 2 Remove weighing sample.
⇒ The display shows zero.
- 3 Press 
⇒ The display shows last stored stable weight value for 5 seconds together with asterisk (*) and memory (M) symbols. After 5 seconds the display goes back to zero. This can be repeated unlimited times.



Delete last weight value

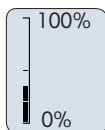
As soon a new stable weight value is displayed, the old recall value becomes replaced by the new weight value.

- Press **→0/T←**.
⇒ The recall value is set to 0.

If the power is switched off, the recall value is lost. The recall value can not be printed.

Weighing with the weighing-in aid

The weighing-in aid is a dynamic graphic indicator which shows the used amount of the total weighing range. You can thus recognize at a glance when the load on the balance approaches the maximum load.



Print / transmit data

Press the  key to transmit the weighing results over the interface e.g. to a printer or a PC.

4 Maintenance

4.1 Cleaning and service

Every now and then, clean the weighing pan, draft shield element, bottom plate, draft shield (depending on the model) and housing of your balance. Your balance is made from high-quality, durable materials and can therefore be cleaned using a damp cloth or with a standard, mild cleaning agent.

Please observe the following notes



WARNING

Danger of death or serious injury due to electric shock!

Contact with parts carrying a live current can lead to injury and death.

- 1 Disconnect the balance from the power supply prior to cleaning and maintenance.
- 2 Only use METTLER TOLEDO power cables if they need to be replaced.
- 3 Prevent liquid from entering the balance, terminal or AC/DC adapter.
- 4 Do not open the balance, terminal or AC/DC adapter.
They do not contain any parts that can be serviced by the user.



NOTICE

Risk of damage to balance due to inappropriate cleaning methods

The balance is made from high quality, resistant materials and can be damaged by certain cleaning agents, solvents or abrasives. Any liquid that enters the housing may damage the balance.

- 1 Use water and a mild detergent to clean the balance or terminal.
- 2 Wipe off any spills immediately.
- 3 Prevent liquid from entering the interior of the balance.

Contact a METTLER TOLEDO representative to find about the service options available – regular maintenance by an authorized service engineer will ensure consistent weighing accuracy over the long term and extend the service life of the balance.

5 Technical Data

5.1 General data



WARNING

Danger of death or serious injury due to electric shock!

Contact with parts that contain a live current can lead to injury and death.

- 1 Only use an approved AC/DC adapter with a current-limited SELV output.
- 2 Ensure correct polarity 

Standard power supply

AC/DC adapter:

Primary: 100 – 240 V, $\pm 10\%$, 50/60Hz, 0.3 A
Secondary: 12 V DC, 0.84 A (with electronic overload protection)

Balance power supply:

12 V DC, 0.84 A

Battery operation:

Can be used up to 2000 m above mean sea level.

4 standard AA (LR6) batteries (alkaline) for 8–15 hours of use



NOTICE

If the balance is used above 2000 m mean sea level, the optional power supply must be used.

Optional power supply

AC/DC adapter:

Primary: 100 – 240 V, $\pm 10\%$, 50/60Hz
Secondary: 12 V DC $\pm 3\%$, 2.5 A (with electronic overload protection)

Cable for AC/DC adapter:

3-core, with country-specific plug

Balance power supply:

12 V DC $\pm 3\%$, 2.25 A, maximum ripple: 80 mVpp

Can be used up to 4000 m above mean sea level.

Protection and standards

Overvoltage category:

II

Degree of pollution:

2

Protection:

Protected against dust and water

Standards for safety and EMC:

See Declaration of Conformity

Range of application:

For use in closed interior rooms only

Environmental conditions

Height above mean sea level:

Depending on the power adapter (2000 - 4000 m)

Except for China: max. 2000 m

Ambient temperature:

Operating conditions for ordinary lab application: +10 to 30°C
(operability guaranteed between +5 and 40°C)

Relative air humidity:

10% up to 80% at 31°C with a linear decrease to 50% at
40°C, non-condensing

Warm-up time:

At least 30 minutes (60 minutes for 0.1 mg models) after
connecting the balance to the power supply. When switched on
from standby, the instrument is ready for operation
immediately.

Materials

Housing:

Housing: Plastic (ABS/PC)

Weighing pan:

ø 160 mm: Stainless steel X5CrNi 18-10 (1.4301)



Good Weighing Practice™

GWP® is the global weighing standard, ensuring consistent accuracy of weighing processes, applicable to all equipment from any manufacturer. It helps to:

- Choose the appropriate balance or scale
- Calibrate and operate your weighing equipment with security
- Comply with quality and compliance standards in laboratory and manufacturing

 www.mt.com/GWP

www.mt.com/jewelry

For more information

Mettler-Toledo GmbH

Im Langacher 44
8606 Greifensee, Switzerland
www.mt.com/contact

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