Jewelry Balances JET 5

<u>User Manual</u>



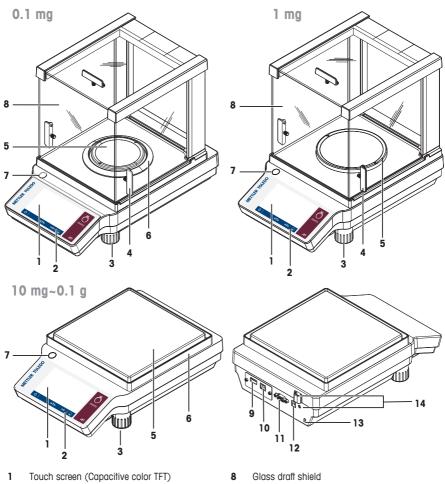


This User Manual is a brief instruction that provides information to handle with the first steps of the instrument in a safe and efficient manner. Personnel must have carefully read and understood this manual before performing any tasks.

For full information, always consult the Reference Manual (RM).

▶ www.mt.com/jet-RM

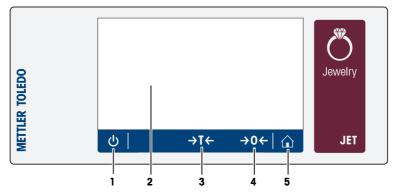
Overview balance



- 2 Operating keys
- 3 Leveling foot
- 4 Handle for operation of the draft shield door
- 5 Weighing pan
- 6 Draft shield element
- 7 Level indicator

- 9 USB host port
- 10 USB device port
- 11 RS232 serial interface
- 12 Socket for AC/DC adapter
- 13 Kensington slot for anti-theft purposes
- 14 Legal for Trade sealing

Overview operation keys



No.	Key	Name	Description
1	ዑ	ON/OFF	Switches the balance on or off.
2		Capacitive color TFT touch screen	General navigation
3	→T←	Tare	Tares the balance.
4	→0 ←	Zero	Zeros the balance.
5		Home	Returns from any menu level, or other window to the application home screen.

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1 Introduction

EULA

The software in this product is licensed under the METTLER TOLEDO End User License Agreement (EULA) for Software.

When using this product you agree to the terms of the EULA.

1.1 Further documents and information

This document is available in other languages online.

▶ www.mt.com/jet-RM

www.mt.com/jewelry

www.mt.com/library

www.mt.com/labweighing-software-download

Search for software downloads

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For further questions, please contact your authorized METTLER TOLEDO dealer or service representative.

www.mt.com/contact

1.2 Compliance information

European Union

The instrument complies with the directives and standards listed on the EU Declaration of Conformity.

United States of America

This equipment has been tested and found to comply with the limits for a **Class A** digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The FCC Supplier Declaration of Conformity is available online.

http://www.mt.com/ComplianceSearch

1.3 Abbreviations

English term	Translated term	Explanation
EMC		Electromagnetic Compatibility
FACT		Fully Automated Calibration Technology
FCC		Federal Communications Commission
GMP		Good Manufacturing Practice
ID		Identification
LPS		Limited Power Source
RM		Reference Manual
RS (RS232)		Recommended Standard (RS232)
SELV		Safety Extra Low Voltage
UM		User Manual
USB		Universal Serial Bus
USP		United States Pharmacopeia

2 Safety Information

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

- The User Manual is printed and delivered with the instrument.
- The electronic Reference Manual contains 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 Reference Manual. 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.

2.1 Definitions of signal warnings 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

DANGER A hazardous situation with high risk, resulting in death or severe injury if not av	oided.
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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



General hazard: read the User Manual or the Reference Manual for information about the hazards and the resulting measures.



Electrical shock



2.2 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



MARNING

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

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.

A listing of all parts can be found in the Reference Manual (RM).

3 Design and Function

3.1 Overview

See also

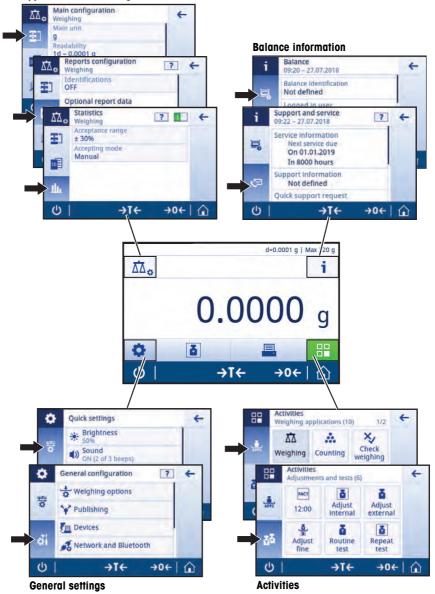
Overview balance > Page 4

3.2 User Interface

The screen displays information and allows the user to enter commands by tapping certain areas on its surface. You can choose the information displayed on the screen, change the balance settings and perform certain operations on the balance.

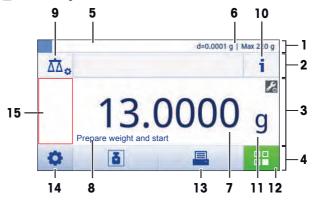
3.2.1 Main settings and activities at a glance

Depending on the application, the options available to be selected and their content may differ.



3.2.2 Application home screen

The application home screen appears after switching the balance on. It always displays the last application that was in use before the balance was switched off. The application home screen is the main screen of the balance. Every function can be accessed from here. You can return to the application home screen at any time by pressing the home button $\widehat{}$ in the lower right corner of the screen.



Information and work bars

	Name	Description
1	Weighing information bar	Displays the weighing-in aid and general balance information.
2	Work title bar	Displays information about the current activity.
3	Value bar	Displays information about the current weighing process.
4	Main navigation	Work-related functions.

Information fields

	Name	Description
5	Weighing-in aid	A dynamic graphic indicator displays how much of the total weighing range is in use.
6	Short balance information	Readability and capacity of the balance.*
7	Weighing value field	Displays the value of the current weighing process (model-specific).
8	Coach text field	Displays instructions for the current weighing process.

* For legal-for-trade approved balances: **Min** (minimum capacity) and **e** (verification of scale interval) are shown in the upper left corner.

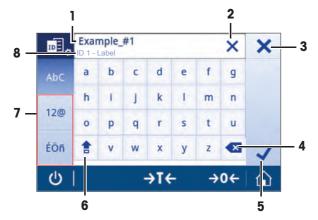
Action buttons

	Name	Description
9	Activity configuration	To configure the current application, e.g., Weighing.
10	Balance information	Displays detailed technical data about the balance.
11	Weighing unit	Displays the unit of the current weighing process (model- and country- specific).
12	Activities	Opens the activities selection.
13	Print	Prints out or transfers results and/or settings (printer required).
14	Settings	Configures balance and user settings/preferences (application independent).
15	Status information field	Displays information about the system status.

3.2.3 Entering characters and numbers

The keyboard allows the user to enter characters, including letters, numbers and a range of special characters.

If a barcode reader is connected to your balance and your sample provides a barcode, scan the product barcode instead of entering the designation manually (e.g. the ID can be scanned via barcode reader to ensure that the sample is clearly assigned to the corresponding product). Additionally, it is possible to connect a USB keyboard to enter the information.



	Name	Description
1	Input field	Displays all characters that have been entered.
2	Delete all	Deletes all entered characters.
3	Discard	Discards the entered data and exits the dialog.
4	Delete	Deletes the last character.
5	Confirm	Confirms the data entered.
6	Shift	Switches between lower and upper case letters.
7	Specialized tabs	Switches keyboard mode for entering letters, numbers or special characters.
8	Explanation field	Extra information about the value to be entered.

3.2.4 Touch screen navigation

To interact with the balance, use the screen and the operating keys at the bottom of the screen.

Opening an application

Due to its size, the display does not show all available applications at once. Scroll the applications by swiping the touchscreen horizontally.

To open settings or applications, tap the application symbol, e.g., A Weighing.



Using Shortcuts

To simplify navigation on the touch screen, there are a few shortcuts that provide quick access to key areas of the balance. For example, the weighing value field on the application home screen works as a shortcut (see screen below), as does the weighing unit next to the weighing value field. Other shortcuts may be available to use depending on the application.

Every setting that can be changed directly via shortcut, can also be changed in the main configuration settings for that application.



4 Installation and Putting into Operation



MARNING

Risk 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.

,

4.1 Selecting the location

A balance is a sensitive precision instrument. The location where it is placed will have a profound effect on the accuracy of the weighing results.

Requirements of the location

Place indoors on stable Ensure sufficient spacing Level the instrument Provide adequate lighting table



Sufficient distance for balance > 15 cm next to the instrument.

Take into account the environmental conditions. See "Technical Data."

4.2 Unpacking the balance

Check the package, the packaging elements and the delivered components for damages. If any components are damaged, please contact your METTLER TOLEDO service representative.

Retain all parts of the packaging. This packaging offers the best possible protection for transporting the balance.

4.3 Scope of delivery

Components	Model			
		0.1 mg	1 mg	10 mg / 100 mg
Draft shield	170 mm	1	1	-
Draft shield element		1	-	1
Weighing pan with pan support	ø 90 mm	1	-	-
	ø 120 mm	-	\checkmark	-
	180 × 180 mm	-	-	1
Pan support		-	-	1
Carat pan	S 80 ø × 20 mm	1	-	-
	M 90 ø × 30 mm	1	-	_
	L 90 ø × 45 mm	1	-	_
Protective cover	1	\checkmark	1	
Universal AC/DC adapter	1	\checkmark	1	
User Manual		1	1	1
Declaration of conformity		 ✓ 	1	1

4.4 Assembling the balance



Injury due to sharp objects or broken glass

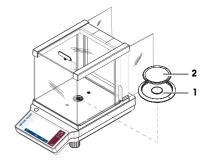
Instrument components, e.g., glass, can break and lead to injuries.

- Always proceed with focus and care.

Balances with a readability of 0.1 mg

Place the following components on the balance in the specified order:

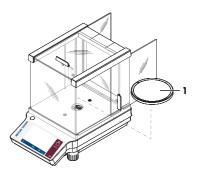
- 1 Push the side glass doors back as far as they will go.
- 2 Insert the draft shield element (1).
- 3 Insert the weighing pan (2).



Balances with a readability of 1 mg

Place the following components on the balance in the specified order:

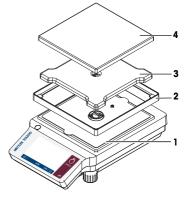
- 1 Push the side glass doors back as far as they will go.
- 2 Insert the weighing pan (1).



Balances with a readability of 10 mg / 100 mg

Place the following components on the balance in the specified order:

- 1 Place the draft shield element (2).
- 2 Carefully pull apart the draft shield element to fix it under the retaining plate (1).
- 3 Place the pan support (3).
- 4 Place the weighing pan (4).



4.5 Putting into operation

4.5.1 Connecting the balance



Risk of electric shock

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

- 1 Only use the METTLER TOLEDO power supply cable and AC/DC adapter designed for your balance.
- 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

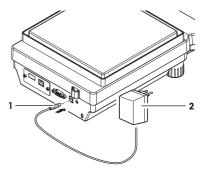
Damage to the AC/DC adapter due to overheating

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 a universal AC/DC adapter or an AC/DC adapter with a country-specific power cable.

- 1 Install the cables so that they cannot be damaged and do not interfere with the operation.
- 2 Insert the power cable in a grounded power outlet that is easily accessible.
- 3 Connect the AC/DC adapter (1) to the connection socket on the back of your balance.
- 4 Connect the power cable (2) to the power socket.
- 5 Screw the plug into the balance if applicable.



Note 🏹

Always connect the AC/DC adapter to the balance before connecting to the power.

Do not connect the instrument to a power outlet controlled by a switch. After switching on the instrument, it must warm up before giving accurate results.

4.5.2 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 connected to the power supply for at least 30 minutes (60 minutes for 0.1 mg models).

- The balance is connected to the power supply.
- The balance is warmed up.
- Press ().
 - ⇒ After the start screen has disappeared, the application home screen will open.

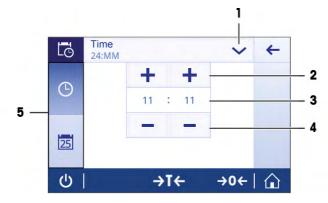
When the balance is switched on for the first time, the **Weighing** application home screen will open. If the balance is switched on again, it will always start with the screen of the application last used before switching it off.

4.5.3 Changing the date and time

Navigation: 😋 > 🛃 General configuration > System settings > Date and Time

The dialog (Picker view) allows the user to set the date and time.

Tap for **Time** and $\fbox{}$ for **Date**. The format can be selected by tapping \checkmark



	Name	Description
1	Change date/time format	Various date/time formats can be selected.
2	Pick button	Increment.
3	Picker field	Displays the defined time/date.
4	Pick button	Decrement.
5	Selection tabs	Tabs of the selectable sub-categories.

4.5.4 Leveling the balance

Exact horizontal and stable positioning are essential for repeatable and accurate weighing results.

Leveling intervals

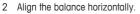
Check and - if necessary - adjust the bubble level:

- when the balance is used for the first time.
- after moving the balance to a new location.
- at regular intervals.

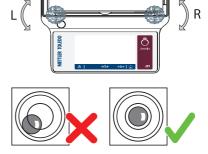
Leveling procedure

The balances are leveled manually by turning the leveling feet at the bottom of the housing.

1 Position the balance at the selected location.



3 Turn the two front leveling feet of the housing until the air bubble is in the middle of the glass.



Example

Air bubble at 12 o'clock:

Air bubble at 3 o'clock:

Air bubble at 6 o'clock:

Air bubble at 9 o'clock:

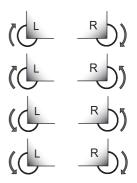


turn both feet clockwise.

turn left foot clockwise, right foot counterclockwise.

turn both feet counterclockwise.

turn left foot counterclockwise, right foot clockwise.



4.5.5 Adjusting the balance

To obtain accurate weighing results, the balance must be adjusted to match the gravitational acceleration at its location. This is also dependent on the ambient conditions. After reaching the operating temperature, it is important to adjust the balance in the following cases:

• Before the balance is used for the first time.

- If the balance has been disconnected from the power supply or in the event of power failure.
- After significant environmental changes, e.g., temperature, humidity, air draft or vibrations.
- At regular intervals during weighing service.

For further information, consult the Reference Manual (RM).



www.mt.com/jet-RM

4.6 Performing a simple weighing

Navigation: $\square > Activities - Weighing applications > A Weighing$

4.6.1 Weighing

Zeroing

Use the $\rightarrow 0 \leftarrow$ zeroing key before starting to weigh anything.

- 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, tare the balance.

- 1 Place a container on the weighing pan.
 - ⇒ The weight is displayed.
- 2 Press \rightarrow **T** \leftarrow to tare the balance.
 - ⇒ 0.000 g and Net appears in the display. Net indicates that all weight values displayed are net values.

Weighing

- Place the sample in the container.
 - \Rightarrow The results are now displayed.
- If the container is removed from the balance, the tare weight will be shown as a negative value.
- The tare weight remains stored until the →T ← key is pressed again or the balance is switched off.

Print / transmit data

The balance can send data to a printer or a PC. Press the 🗏 key to transmit the weighing results or settings via the interface. The procedure for activating and configuring a printer is described in "Publishing" and "Devices".

- Printer is connected to the balance.
- Printer is switched on.
- Printer is activated and configured.

— Tap 昌.

 \Rightarrow The data are transmitted.

Switching off

- 1 Press and hold () until the dialog Switch-off appears.
- 2 Tap 🖌 to confirm.
 - \Rightarrow The balance switches off and enters standby mode.
- After switching on from standby mode, the balance does not need to warm up. It is immediately ready to start weighing.
- If the balance has been switched off manually, the display will also be off.
 To switch off the balance fully, it must be disconnected from the power supply.

4.6.2 Changing the readability

Changing the readability

There are several readabilities available. The default readability (d) is model-specific.

1 Tap the weighing value.



Select the desired readability. Confirm the selected readability by tapping .

⇒ The readability has now been changed.

4.6.3 Switching weight units

Switching weight units

There are several weighing units available. The default value is country-specific.

The weighing unit can be selected using the activity configuration or via shortcut. This example describes how to change the weighing unit via shortcut.

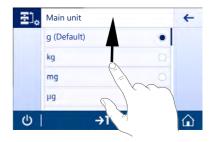
🖹 Note

With legal-for-trade approved balances, the menu topic has a fixed setting and cannot be changed.

- 1 Tap the weighing unit.
 - ⇒ The screen Main unit appears.



- 2 Select the desired weighing unit by tapping it.
- 3 Tap 🗸 to confirm.
- \Rightarrow The weighing unit has now been changed.



4.7 Transporting, packaging and storage

Preparing the balance for transport

CAUTION



Injury due to sharp objects or broken glass

Instrument components, e.g., glass, can break and lead to injuries.

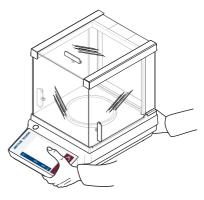
- Always proceed with focus and care.
- 1 Press and hold the U key.
- 2 Disconnect the balance from the power supply.
- 3 Disconnect all interface cables.

4.7.1 Transporting over short distances

To move the balance over a short distance to a new location, follow the instructions below.

If you want the balance put into operation, proceed as follows:

- 1 Connect in reverse order.
- 2 Level the balance.
- 3 Perform an internal adjustment.
- 1 Hold the balance with both hands as shown.
- 2 Carefully lift the balance and carry the balance in horizontal position to the new location.



4.7.2 Transporting over long distances

To transport the balance over long distances, always use the original packaging.

4.7.3 Packaging and storage

Packaging

Store all parts of packaging in a save place. The elements of the original packaging are developed specifically for the balance and its components to ensure maximum protection during transportation or storing.

Storage

Store the balance under following conditions:

- Indoor and in the original packaging.
- · According to the environmental condition, see "Technical data".
- When storing for longer than six months, the rechargeable battery maybe down (date and time get lost).

5 Maintenance

To guarantee the functionality of the balance and the accuracy of the weighing results, a number of maintenance actions must be performed by the user.



For further information, consult the Reference Manual (RM).

www.mt.com/jet-RM

5.1 Maintenance tasks

Maintenance action	Recommended interval	Remarks
Performing an internal	• Daily	see "Activities - Adjustments and
adjustment	After cleaning	tests"
	After leveling	
	After changing the location	
Cleaning	After every use	see "Cleaning"
	After changing the substance	
	Depending on the degree of pollution	
	Depending on your internal regulations (SOP)	

5.2 Cleaning



Death or serious injury due to electric shock

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

- 1 Disconnect the instrument from the power supply prior to cleaning and maintenance.
- 2 Prevent liquid from entering the instrument, terminal or AC/DC adapter.

5.2.1 Cleaning the balance



NOTICE

Damage due to improper cleaning

Improper cleaning can damage the load cell or other essential parts.

- 1 Do not use any cleaning agents other than the ones specified in the "Reference Manual" or "Cleaning Guide".
- 2 Do not spray or pour liquids on the instrument. Always use a moistened lint-free cloth or a tissue.
- 3 Always wipe out from inside to outside of the instrument.

The appropriate maintenance interval depends on your standard operating procedure (SOP).

Around the balance

- Remove any dirt or dust around the balance and avoid further contaminations.

Cleaning the balance

- 1 Use a lint-free cloth moistened with a mild cleaning agent to clean the surface of the balance.
- 2 Remove powder or dust at first with a disposable tissue.
- 3 Remove sticky substances with a damp lint-free cloth and a mild solvent.

Cleaning all removable parts

- Clean all removed part with a damp cloth or a tissue and a mild cleaning agent.

Note

Useful details to avoid soiling are described in the METTLER TOLEDO "SOP for Cleaning a Balance".

5.2.2 Cleaning the draft shield (0.1 mg and 1 mg models)

Removing or inserting sliding glass doors

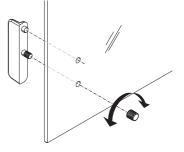
It is possible to remove the sliding glass doors for cleaning or for replacing.

Note

Front and rear glass panels cannot be removed.

- 1 Remove the handle.
- 2 Pull the side glass out to the rear.

After cleaning, reinstall all components in the reverse order. Installing the handle after insertion of the glass door.



5.2.3 Putting into operation after cleaning

- 1 Reassemble the balance.
- 2 If applicable: Check smooth movement of the draft shield.
- 3 Press () to switch on the balance.
- 4 Warm up the balance. Wait 1h for the acclimatization, before starting the tests.
- 5 Check the level and level the balance if necessary.
- 6 Perform an internal adjustment.
- 7 Perform a routine test according to the internal regulations of your company. METTLER TOLEDO recommends to perform a repeatability test after cleaning the balance.
- 8 Press $\rightarrow 0/T \leftarrow$ to zero the balance.
- \Rightarrow The balance has been put into operation and is ready to use.

6 Technical Data

6.1 General data

Standard power supply	
AC/DC adapter:	Primary: 100 – 240 V~ 0.5 A, 50 – 60 Hz
	Secondary: 12 V 1.0 A MAX 24 - 34 VA LPS, SELV
Balance power consumption:	12 V DC, 0.84 A
Polarity:	⊝⊕
Mean see level:	Can be used up to 2000 m above mean sea level
	If the balance is used above 2000 m mean sea level, the power supply for 0.1 mg models must be used
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 (up to 2000 or 4000 m)
Ambient temperature:	Operating conditions for ordinary lab application: +10 to 30 $^\circ C$ (operability guaranteed between +5 and 40 $^\circ C$)
Relative air humidity:	Max. 80% up to 31 °C, linearly decreasing to 50% at 40 °C, noncondensing
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:	Top Housing: Plastic (ABS)
	Bottom housing: Die-cast aluminum, powder coated
Weighing pan:	Pan ø 90 mm: Stainless steel X2CrNiMo 17-12-2 (1.4404)
	All others: Stainless steel X5CrNi 18-10 (1.4301)
Draft shield element:	0.1 mg models: Stainless steel X2CrNiMo 17-12-2 (1.4404)
Draft shield:	Plastic (ABS), glass
Protective cover:	Plastic (PET)
TFT touch screen surface:	Glass

7 Disposal

In conformance with the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.



Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment. If you have any questions, please contact the responsible authority or the distributor from which you purchased this device. Should this device be passed on to other parties, the content of this regulation must also be related.

 GWP^{\otimes} 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

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