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1 Introduction

Thank you for choosing a METTLER TOLEDO balance.

The balances of the XS line combine a large number of weighing and adjustment possibilities with exceptionally convenient operation.

In this chapter you will be given basic information about your balance. Please read right through this chapter carefully even if you already have experience with METTLER TOLEDO balances. Please pay special attention to the safety warnings!

The different models have different characteristics regarding equipment and performance. Special notes in the text indicate where this makes a difference to operation.

The XS line comprises a range of balances which differ from each other in relation to their weighing range and resolution.

The following features are common to all models of the XS lines:

- Fully automatic adjustment "FACT" using internal weight.
- Built-in applications for normal weighing, statistics, formulation, density, percent weighing, piece counting and LabX Client.
- Integral RS232C interface.
- Slot for second interface (optional).
- Touch-sensitive graphics terminal ("Touch Screen") for easy, convenient operation.

A brief word about standards, guidelines, and methods of quality assurance: The balances comply with usual standards and guidelines. They support standard procedures, specifications, working methods, and reports according to GLP (Good Laboratory Practice). In this connection, records of working procedures and adjustments become very important; for this purpose we recommend you to use a printer from the METTLER TOLEDO range, since these are optimally adapted to your balance. The balances conform to the applicable standards and guidelines and possess an EC declaration of conformity. METTLER TOLEDO is certified as manufacturer according to ISO 9001 and ISO 14001.

The Operating Instructions for the XS balances consist of 3 separate documents, whose contents are listed below.

Part 1, This Document

Contents

- Introduction
- Safety Information
- Setting up the Balance
- Leveling the Balance
- Cleaning and Service
- Technical Data
- Interface commands and MT-SICS functions
- Accessories
- Spare Parts

Part 2, Separate Document

Contents: Terminal, System and Applications

- Basic Principles for Using the Terminal and the Firmware
- System Settings
- Applications
- Firmware (Software) Updates
- Error and Status Messages
1.1 Conventions and Symbols Used in These Operating Instructions

The following conventions apply to the operating instructions: Part 1, Part 2 and Part 3.

Key designations are indicated by a picture or text in double angular parentheses (e.g. «» or «On/Off»).

This symbol indicates press key briefly (less than 1.5 s).

This symbol indicates press and hold key down (longer than 1.5 s).

These symbols indicate an instruction:

▲ prerequisites
1 steps
2 …
⇒ results
2 Safety Information

2.1 Definition of Signal Warnings and Symbols

Safety notes are marked with signal words and warning symbols. These show safety issues and warnings. Ignoring the safety notes may lead to personal injury, damage to the balance, malfunctions and false results.

Signal Words

**WARNING** for a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided.

**CAUTION** for a hazardous situation with low risk, resulting in damaged to the device or the property or in losing of data or minor or medium injuries if not avoided.

**Attention** (no symbol) for important information about the product.

**Note** (no symbol) for useful information about the product.

Warning Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><img src="image" alt="General hazard" /></td>
<td>General hazard</td>
</tr>
<tr>
<td><img src="image" alt="Electrical shock" /></td>
<td>Electrical shock</td>
</tr>
</tbody>
</table>

2.2 Product Specific Safety Notes

Always operate and use your balance only in accordance with the Operating Instructions Part 1, Part 2 and Part 3.

The instructions for setting up your new balance must be strictly observed.

**If the instrument is not used according to the manufacturer’s Operating Instructions (Part 1, Part 2 and Part 3), protection of the instrument may be impaired.**

**Intended Use**

Your balance is used for weighing. Use the balance exclusively for this purpose. Any other type of use and operation beyond the limits of technical specifications without written consent from Mettler-Toledo AG, is considered as not intended.

It is not permitted to use the instrument in explosive atmosphere of gases, steam, fog, dust and flammable dust (hazardous environments).
**CAUTION**

**Damage of Device**

– For use only in dry interior rooms.

– Do not use sharply pointed objects to operate the keyboard! Although your balance is very ruggedly constructed, it is nevertheless a precision instrument. Treat it with corresponding care.

– Do not open the balance: It does not contain any parts which can be maintained, repaired, or replaced by the user. If you ever have problems with your balance, contact your METTLER TOLEDO dealer.

– Use only balance accessories and peripheral devices from METTLER TOLEDO; they are optimally adapted to your balance.

---

**CAUTION**

**Damage of Device**

Use only the original universal AC adapter delivered with your balance, and check that the voltage printed on it is the same as your local power supply voltage. Only plug the adapter into a socket which is grounded.
Overview XS Analytical Balance

Overview

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Terminal (details see Operating Instructions – Part 2)</td>
</tr>
<tr>
<td>2</td>
<td>Display (Touch-sensitive “Touch Screen”)</td>
</tr>
<tr>
<td>3</td>
<td>Operating keys</td>
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<td>4</td>
<td>Drip tray</td>
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<tr>
<td>5</td>
<td>Handle for variable operation of the draft-shield side doors</td>
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<tr>
<td>6</td>
<td>Grid weighing pan</td>
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<tr>
<td>7</td>
<td>Glass draft shield</td>
</tr>
<tr>
<td>8</td>
<td>Type name</td>
</tr>
<tr>
<td>9</td>
<td>Handle for operation of the draft-shield top door</td>
</tr>
<tr>
<td>10</td>
<td>Guide for top door of draft shield and handle for transport</td>
</tr>
<tr>
<td>11</td>
<td>Level indicator</td>
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<tr>
<td>12</td>
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<td>13</td>
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<td>Socket for AC adapter</td>
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<td>Fastening point for anti-theft device</td>
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<td>16</td>
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<tr>
<td>17</td>
<td>Aux 2 (connection for “ErgoSens”, hand- or foot-switch)</td>
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<tr>
<td>18</td>
<td>Aux 1 (connection for “ErgoSens”, hand- or foot-switch)</td>
</tr>
</tbody>
</table>
4 Setting up the Balance

This chapter explains how to unpack your new balance, and how to set it up and prepare it for operation. When you have carried out the steps described in this chapter, your balance is ready for operation.

4.1 Unpacking and Checking the Delivered Items

4.1.1 Unpacking the Balance

Use the lifting strap to lift the balance out of the packaging carton.

Overview

1 Lifting strap
2 Top packing cushion
3 Operating Instructions and other important documents
4 Balance
5 Set with draft-shield doors and terminal support
6 Set with AC adapter, power supply cable, drip tray, grid weighing pan, grid weighing pan cover, set of single-use pans and Ergo-Clip "Basket" (basket for small weighing objects)
7 Terminal

Note
The terminal is connected to the balance by a cable!

8 Bottom packing cushion

1 Unfasten lifting strap (1).
2 Remove top packing cushion (2).

1 Pull out Operating Instructions (3).
2 Remove set with AC adapter etc. (4).
3 Remove set with draft-shield doors etc. (5).
– Carefully pull the terminal out of the bottom packing cushion and remove the protective cover.

**Note**
The terminal is connected to the balance by a cable, so only pull the terminal just far enough out of the packing cushion to remove the protective cover.

1. Place the terminal on the front of the balance.
2. Hold the balance by the guide or handle, hold the terminal firmly with your other hand, and pull the balance and terminal together out of the bottom packing cushion.

1. Place the balance with the terminal in the place where the balance will be used for weighing.
2. Remove the cover from the balance.
3. Pull the transport protection (9) of the weighing pan support toward the front and off.

**Note**
Please keep all parts of the packaging. This packaging guarantees best possible protection of your balance for transportation, see Transporting the Balance (page 17).

### 4.2 Scope of Delivery

The standard scope of delivery contains the following items:

- Balance with terminal
  - RS232C interface
  - Slot for second interface (optional)
  - Feedthroughs for below-the-balance weighing and for antitheft device
• Set with draft-shield doors and terminal support
• Grid weighing pan
• Grid weighing pan cover of chrome-nickel steel (attachment for grid weighing pan)
• Set of single-use aluminum weighing pans (10 pans) for mounting on the grid weighing pan
• Drip tray
• AC adapter with country-specific power cable
• Protective cover for the terminal
• Cleaning brush
• ErgoClip “Basket” (basket for small weighing objects)
• Production certificate
• CE declaration of conformity
• Operating Instructions Part 1 (this document), Part 2 and Part 3
• Instructions for unpacking, re-packing, and setting up

4.3 Selecting a Location and Leveling the Balance

4.3.1 Location

Choose a position which is stable, free from vibration, and as nearly horizontal as possible. The supporting surface must be able to bear the weight of the fully loaded balance safely.

Avoid the following:
• Direct sunlight
• Draft (e.g. from fans or air conditioning)
• Excessive fluctuations in temperature.

Further information can be found in Weighing the Right Way.

Observe ambient conditions. See Technical Data (page 24).

4.3.2 Leveling the Balance

The balances have a level indicator and two adjustable leveling feet to compensate for slight irregularities in the surface of the weighing bench.

1 Adjust the two leveling feet appropriately until the air bubble comes to rest exactly in the middle of the glass:
   - Air bubble at "12 o’clock" turn both feet counterclockwise.
   - Air bubble at "3 o’clock" turn left foot clockwise, right foot counterclockwise.
   - Air bubble at "6 o’clock" turn both feet clockwise.
   - Air bubble at "9 o’clock" turn left foot counterclockwise, right foot clockwise.

2 The balance must be leveled and adjusted each time it is moved to a new location.
4.4 Assembling the Balance

1. Remove the transport protection (1).
2. Insert the drip tray (2).
   ⇒ Push the tray in from the front over the bottom plate as far as the partition.

– Insert the grid weighing pan from the front.
⇒ Check that the grid weighing pan (1) (2) is correctly hooked in at both sides.

1. Insert the top door of the draft shield (1) at an angle (slightly less than 30 degrees) into the guide positioned at the back.
2. Swivel the draft-shield door (2) carefully down, see figure.

⇒ The handles (A) must be turned toward the outside to allow installation of the side draft shield doors!
1. Insert the side doors of the draft shield according to the following instructions, see figure below.
2. Insert the side door at an angle of approx. 30° into the 2 openings, see figure.
3. Check that the side door is correctly inserted as shown!
4. Swivel the side door up against the balance until it engages with a click.
5. The side door must run easily, otherwise it is not correctly inserted.
6. Insert the second side door of the draft shield.
   ⇒ The procedure is identical.
7. Push the side doors completely to the back.
1 Insert the front glass (2) of the draft shield.
2 In the bottom part of the balance at the front, move at an angle from the top toward the bottom until the two hooks of the front glass of the draft shield lie on the rollers (1).
3 Swivel the front glass of the draft shield up until it engages.

1 Insert the terminal support.
2 First lay the cable in the guide by the terminal support.
3 Insert the terminal support into the opening of the front glass of the draft shield.
   ➞ The terminal support must engage with a click.

1 Mount the terminal.
2 Place the terminal in the center of the support.
3 Push it against the balance until it swivels slightly down at the front by the terminal support.
   ➞ You can push the cable into the balance.

Attention
The balance and the terminal are not fastened together by the terminal support! When transporting by hand, always hold the balance and the terminal firmly, see Transporting the Balance (page 17).

Note
You can also place the terminal free of the terminal support anywhere around the balance where the length of the cable allows.
4.5 Power Supply

**WARNING**

*Risk of electric shock*

– Ensure that the AC power pack for the balance is only used in accordance with the specifications listed in chapter General Data.

– Your instrument is supplied with a 3-pin power cable with an equipment grounding conductor. Only extension cables which meet this relevant standards and also have an equipment grounding conductor may be used. Intentional disconnection of the equipment grounding conductor is prohibited.

- Your balance is delivered complete with an AC adapter and a country-specific power supply cable. The AC adapter is suitable for all power supply voltages in the range of: 100 – 240 VAC, 50/60 Hz, for exact specifications, see Technical Data (page 24).

- First, check whether the voltage of the power supply matches your local line voltage. If this is not the case, on no account connect the balance to the power, but contact your METTLER TOLEDO sales representative or dealer.

- Guide the cables so that they cannot become damaged and will not be in your way during your daily work! Take care that the AC adapter cannot come into contact with liquids!

- The power plug must be always accessible.

- Before operating, check all cables for damage.

- Plug the AC adapter (1) into the socket (2) in the back of your balance and into the power supply.

⇒ After the balance has been connected to the power supply, it carries out a self test and is then ready for operation.
Note
If the display field remains dark, even though the power supply con-
nection functions.
1 First disconnect the balance from the power supply.
2 Open the terminal.
3 Press both buttons (1) on the back of the terminal and open the
upper part of the terminal.
4 Check that the plug for the terminal cable (2) is connected correctly
inside the terminal.

4.6 Left/Right Operating of the Glass Draft Shield

The glass draft shield of your balance can be adapted to the environmental conditions and your weighing style,
as well as to the type of weighing and loading.

The position of the handles determines which door(s) of the draft
shield (left, right, or both) is/are opened.

Try various different combinations by moving the external handles into
the upper or lower position. We recommend you to set up the glass
draft shield so that it only opens on the side where the balance is load-
ed. Your balance then works faster, because there are fewer trouble-
some currents of air than when both doors of the draft shield are
opened together.

4.7 Setting the Reading Angle and Positioning the Terminal

4.7.1 Optimise the Readability of the Terminal

Changing the reading angle
1 For a steeper reading angle, pull both levers (1) at the side
upward.
⇒ You can then pull the upper part of the terminal slowly upward
until it engages in the desired position. A total of 3 setting posi-
tions are available.
2 Move it in an appropriate position.
3 For a flatter reading angle, pull both levers (1) at the side upward,
and press the lower part of the terminal downward.
4 Release both levers and the upper part of the terminal then engages
in the desired position.

4.7.2 Remove Terminal and Place Close to the Balance

The terminal is connected to the balance by a cable. So you can arrange your workplace optimally, the terminal
can be removed from the balance and placed separately.
Place the terminal separately

1. Switch the balance off.
2. Carefully lift the terminal off the terminal support.
   You can leave the terminal support on the balance or remove it.
3. Pull the cable carefully out from the balance as far as possible.
4. Place the terminal where you want it to be.

Note
The cable can also be led out of the back of the balance. If working this way would be convenient for you, call your METTLER TOLEDO dealer who will adapt the balance for you.

4.8 Transporting the Balance

1. Switch off the balance.
2. The balance must be disconnected from the power supply.
3. Remove any interface cable from the balance.

4.8.1 Transporting Over Short Distances

If you wish to move your balance over a short distance to a new location, proceed as follows.

---

Similarly, I've extracted the following information:

**CAUTION**

**Damage of Device**

Never lift the balance by the glass draft shield, as this can cause damage!

---

1. With one hand, hold the balance by the guide for the top door of the draft shield.
2. With your other hand, hold the terminal. The terminal is not rigidly fastened to the balance, so you must always hold the balance with one hand and the terminal with the other.
3. Carefully lift the balance and carry it to its new location, observe the notes in chapter Location (page 12).
4.8.2 Transporting Over Long Distances

If you want to transport or ship your balance over long distances, or if it is not certain that the balance will be transported upright, use the complete original packaging.

Disassemble the following parts

1. Lift the terminal (1) out of the terminal support and place it next to the support.
2. Pull the terminal support (2) off the balance.
3. Swivel the front glass (3) of the draft shield away from the balance.
4. Carefully fold the side doors (4+5) of the draft shield against the respective handles and pull the side doors out of the guide.
5. Swivel the front of the top door (6) of the draft shield up and pull the door out of the guide.
6. Carefully raise the front of the grid weighing pan (7) and lift it out of the guide.
7. Pull the drip tray (8) toward the front and out.

Pack the draft shield, the intermediate shelf and the terminal support (Pos. 2-6)

– Place these parts in the compartments provided in the original packaging.

Note
We advise you to place a sheet of paper between the sides glasses of the draft shield.

Pack the AC adapter, the power supply cable, and the individual parts (steps 7+8)

1. Place the AC adapter and the power supply cable in the packaging.
2. Place the drip tray (8) upside down in the packaging.
3. Place the grid weighing pan (7) upside down on the drip tray.
4. Place the ErgoClip “Basket” in the packaging.

CAUTION

Damage of Device

These instructions must be followed exactly, otherwise the balance may be damaged when inserting it into the packing cushions.
1. Push the transport protection over the weighing pan guide.
2. Push the guide of the top draft-shield door completely to the front.
3. Swivel the handle of the side door of the draft shield upward, and also push this door completely to the front.

**Note**

For packing both the balance and the terminal, you have a protective cover in which they were delivered. These are deliberately not shown in the illustrations so you can see better how the individual items must be positioned. However, we recommend you to use these protective covers.

1. Place the terminal on the balance (see illustration) and carefully insert the balance into the bottom packing cushion.
2. Take the terminal and place it in front of the packing cushion on the table.
   - Insert the packing set with the draft-shield glasses into the packing cushion, see illustration.
   - Place the set with the AC adapter in front of the set with the draft-shield glasses.
   - Insert the terminal into the packing cushion as shown in the illustration.
1. Now put the top packing cushion in place.  
   ⇒ Taking care to position it correctly.
2. Pass the lifting strap around both packing cushions, see illustration.
3. Tighten it until it lies close against the packaging.  
   ⇒ You can now lift the packed balance by the lifting strap and insert it into the transport carton.

4.9 Below-the-Balance Weighing

So that weighings can be carried out below the working surface (below-the-balance weighing), your balance is provided with a special hanger.

1. Switch off the balance.
2. Unplug the cable of the AC adapter from the back of the balance.
3. Also remove any interface cables.
4. Push all the doors of the glass draft shield completely to the back.
5. Lift the terminal off the terminal support.
6. Open the terminal and carefully pull the connecting cable out, see Power Supply (page 15).
7. Put the terminal down at the side of the balance.
8. Pull the balance over the table edge just far enough that you see the opening from below, see figure left.
9. Slacken the screw until the cover plate can be turned to the side and the hanger for weighing below the balance is easily accessible. You must now fasten the cover plate in the new position by tightening the screw, see figure right.
   ⇒ Your balance is now ready for mounting your equipment for below-the-balance weighings.

4.10 Installing the ErgoClip

Attention
Before you install an ErgoClip you must switch off the balance «On/Off» key.

To install the ErgoClip included in the delivery, or an optional ErgoClip, please proceed as follows:

1. Remove the grid weighing pan (SmartGrid) from the balance.
2. Snap the ErgoClip onto the grid weighing pan.
3. Replace the grid weighing pan (SmartGrid) along with the installed ErgoClip.
   ⇒ The optional "Flask" or "Tube" ErgoClips can be inserted directly, see Accessories (page 30).
4. Switch the balance on again «On/Off» key.
Important to know!
If you do not switch the balance off before you do the installation, the FACT function is not activated.

Reason
Addition of the ErgoClip causes the dead-load tolerance range of the balance to be exceeded. The balance therefore does not activate FACT, so as not to interrupt the assumed weighing operation.

When this status icon appears in the display, it means: "The balance wants to execute FACT" but cannot.

4.11 Installing the Single-use Aluminum Weighing Pan

Note
For standard operation with conventional tare containers, we do not recommend using this weighing pan. Its use may affect the stabilization time and degree of accuracy. The listed specifications are reached without a single-use weighing pan.

CAUTION
Hand injuries
Take care when handling the aluminum weighing pan, the corners and edges are extremely sharp!

- To install the single-use aluminum weighing pan, remove the grid weighing pan from the weighing chamber, see Assembling the Balance (page 13).

⇒ Only to be used for weighing highly-specialized tare containers.

1. Place the single-use aluminum weighing pan onto the grid weighing pan from above.
2. Fold the 4 side flaps under the bars of the grid weighing pan.

4.12 Installing the Grid Weighing Pan Cover

Note
For standard operation with conventional tare containers, we do not recommend using this weighing pan. Its use may affect the stabilization time and degree of accuracy. The listed specifications are reached without a weighing pan.

CAUTION
Hand injuries
Take care when handling the weighing pan, the corners and edges are extremely sharp!

Attention
With installed grid weighing pan cover, the balance does not switch to "Standby" mode!
1 For the installation, remove the grid weighing pan from the weighing chamber.
2 Gently press the cover onto the grid weighing pan.
3 Replace the grid weighing pan with the installed grid weighing pan cover.
5 Maintenance

5.1 Cleaning

Periodically clean the weighing pan, the drip tray, the housing, and the terminal of your balance using the brush supplied with it. The maintenance interval depends on your standard operating procedure (SOP).

Please observe the following notes

**WARNING**

**Damage of balance**

- The balance must be disconnected from the power supply.
- Ensure that no liquid comes into contact with the balance, the terminal or the AC adapter.
- Never open the balance, terminal or AC adapter – they contain no components, which can be cleaned, repaired or replaced by the user.

**CAUTION**

**Damage of balance**

On no account use cleaning agents which contain solvents or abrasive ingredients, as this can result in damage to the terminal overlay.

**Cleaning**

Your balance is made from high quality, resistant materials and can therefore be cleaned with a commercially available, mild cleaning agent.

1. To clean the weighing chamber thoroughly, swivel the glasses of the draft shield away from the balance and pull them out of their fastenings.
2. Carefully raise the front of the weighing pan and lift it out of the guide.
3. Pull the drip tray away from the balance.
4. When you replace these parts, make sure they are in the correct position.

**Note**

Please contact your METTLER TOLEDO dealer for details of the available service options. Regular servicing by an authorized service engineer ensures constant accuracy for years to come and prolongs the service life of your balance.

5.2 Disposal

In conformance with the European Directive 2002/96/EC 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 (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.
6 Technical Data

6.1 General Data

**CAUTION**

Use only with a tested AC Adapter with SELV output current. Ensure correct polarity.

<table>
<thead>
<tr>
<th>Power supply</th>
<th>11107909</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary: 100-240 VAC, -15%/-10%, 50/60 Hz</td>
<td></td>
</tr>
<tr>
<td>Secondary: 12 VDC ±/-3%, 2.0 A (with electronic overload protection)</td>
<td></td>
</tr>
</tbody>
</table>

Cable to AC adapter: Design: 3-core, with country-specific plug

**Note**

Make sure the power supply plug is freely accessible

Power supply to the balance: 12 VDC ±/-3%, 2.0 A, maximum ripple: 80 mVDCpp

**Protection and standards**

- Overvoltage category: Class 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 only in closed interior rooms

**Environmental conditions**

- Height above mean sea level: Up to 4000 m
- Ambient temperature: 5-40 °C
- Relative air humidity: Max. 80% at 31 °C, linearly decreasing to 50% at 40 °C, non-condensing
- Warm-up time: At least 120 minutes after connecting the balance to the power supply; when switched on from standby-mode, the balance is ready for operation immediately

**Materials**

- Housing: Die-cast aluminum, lacquered, plastic and chrome steel
- Terminal: Die-cast zinc, lacquered, and plastic
- Grid weighing pan: Chrome-nickel steel X5CrNi18-10

6.2 Explanatory Notes for the METTLER TOLEDO AC Adapter

The certified external power supply which conforms to the requirements for Class II double insulated equipment is not provided with a protective earth connection but with a functional earth connection for EMC purposes. This earth connection IS NOT a safety feature. Further information about conformance of our products can be found in the brochure “Declaration of Conformity” which is coming with each product.

In case of testing with regard to the European Directive 2001/95/EC the power supply and the balance have to be handled as Class II double insulated equipment.

Consequently an earth bonding test is not required. Similarly it is not necessary to carry out an earth bonding test between the supply earth conductor and any exposed metalwork on the balance.
Because the balance are sensitive to static charges, a leakage resistor, typically 10 kΩ, is connected between the earth connector and the power supply output terminals. The arrangement is shown in the equivalent circuit diagram. This resistor is not part of the electrical safety arrangement and does not require testing at regular intervals.

Equivalent circuit diagram

### 6.3 Model-specific Data

<table>
<thead>
<tr>
<th></th>
<th>XS64</th>
<th>XS104</th>
<th>XS204DR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Limit values</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum capacity</td>
<td>61 g</td>
<td>120 g</td>
<td>220 g</td>
</tr>
<tr>
<td>Readability</td>
<td>0.1 mg</td>
<td>0.1 mg</td>
<td>1 mg</td>
</tr>
<tr>
<td>Tare range (from...to)</td>
<td>0 … 61 g</td>
<td>0 … 120 g</td>
<td>0 … 220 g</td>
</tr>
<tr>
<td>Maximum capacity, fine range</td>
<td>–</td>
<td>–</td>
<td>81 g</td>
</tr>
<tr>
<td>Readability, fine range</td>
<td>–</td>
<td>–</td>
<td>0.1 mg</td>
</tr>
<tr>
<td>Repeatability (at nominal load)</td>
<td>sd 0.1 mg (60 g)</td>
<td>0.1 mg (100 g)</td>
<td>0.7 mg (200 g)</td>
</tr>
<tr>
<td>Repeatability (at low load)</td>
<td>sd 0.07 mg (10 g)</td>
<td>0.07 mg (10 g)</td>
<td>0.5 mg (10 g)</td>
</tr>
<tr>
<td>Repeatability, fine range (at low load)</td>
<td>sd –</td>
<td>–</td>
<td>0.1 mg (10 g)</td>
</tr>
<tr>
<td>Linearity deviation</td>
<td>0.2 mg</td>
<td>0.2 mg</td>
<td>1 mg</td>
</tr>
<tr>
<td>Eccentricity deviation (test load)</td>
<td>0.15 mg (20 g)</td>
<td>0.3 mg (50 g)</td>
<td>0.3 mg (100 g)</td>
</tr>
<tr>
<td>Sensitivity offset (test weight)</td>
<td>0.9 mg (60 g)</td>
<td>1 mg (100 g)</td>
<td>1 mg (200 g)</td>
</tr>
<tr>
<td>Sensitivity temperature drift</td>
<td>0.00015%/°C</td>
<td>0.00015%/°C</td>
<td>0.00015%/°C</td>
</tr>
<tr>
<td>Sensitivity stability</td>
<td>0.0002%/a</td>
<td>0.0002%/a</td>
<td>0.0002%/a</td>
</tr>
<tr>
<td><strong>Typical values</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>0.04 mg</td>
<td>0.04 mg</td>
<td>0.4 mg</td>
</tr>
<tr>
<td>Repeatability, fine range</td>
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<td>–</td>
<td>0.04 mg</td>
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<tr>
<td>Linearity deviation</td>
<td>0.1 mg</td>
<td>0.13 mg</td>
<td>0.3 mg</td>
</tr>
<tr>
<td>Eccentricity deviation (test load)</td>
<td>0.06 mg (20 g)</td>
<td>0.15 mg (50 g)</td>
<td>0.16 mg (100 g)</td>
</tr>
<tr>
<td>Sensitivity offset (test load)</td>
<td>1.2 mg (60 g)</td>
<td>0.6 mg (100 g)</td>
<td>0.8 mg (200 g)</td>
</tr>
<tr>
<td>Minimum sample weight (according to USP)</td>
<td>120 mg</td>
<td>120 mg</td>
<td>1200 mg</td>
</tr>
<tr>
<td>Minimum sample weight (according to USP), fine range</td>
<td>–</td>
<td>–</td>
<td>120 mg</td>
</tr>
<tr>
<td>Minimum sample weight (U=1%, k=2)</td>
<td>8 mg</td>
<td>8 mg</td>
<td>80 mg</td>
</tr>
<tr>
<td>Minimum sample weight (U=1%, k=2), fine range</td>
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<td>–</td>
<td>8 mg</td>
</tr>
<tr>
<td>Settling time</td>
<td>1.5 s</td>
<td>1.5 s</td>
<td>1.5 s</td>
</tr>
<tr>
<td>Settling time, fine range</td>
<td>–</td>
<td>–</td>
<td>1.5 s</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance dimensions (WxDxH)</td>
<td>263x453x322 mm</td>
<td>263x453x322 mm</td>
<td>263x453x322 mm</td>
</tr>
<tr>
<td>Weighing pan dimensions</td>
<td>78x73 mm (WxD)</td>
<td>78x73 mm (WxD)</td>
<td>78x73 mm (WxD)</td>
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<tr>
<td><strong>Typical uncertainties and supplementary data</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>sd 0.04mg +0.000015%-Rgr</td>
<td>0.04mg +0.00002%-Rgr</td>
<td>0.4mg +0.00005%-Rgr</td>
</tr>
</tbody>
</table>

Technical Data
<table>
<thead>
<tr>
<th></th>
<th>XS64</th>
<th>XS104</th>
<th>XS204DR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability, fine range</td>
<td>sd</td>
<td>—</td>
<td>0.04 mg +0.0002 % - Rgr</td>
</tr>
<tr>
<td>Differential linearity deviation</td>
<td>sd</td>
<td>√(40pg-Rnt)</td>
<td>√(40pg-Rnt)</td>
</tr>
<tr>
<td>Differential eccentric load deviation</td>
<td>sd</td>
<td>0.00015% - Rnt</td>
<td>0.00008% - Rnt</td>
</tr>
<tr>
<td>Sensitivity offset</td>
<td>sd</td>
<td>0.001% - Rnt</td>
<td>0.0003% - Rnt</td>
</tr>
<tr>
<td>Minimum sample weight (according to USP)</td>
<td>120 mg+0.04% - Rgr</td>
<td>120 mg+0.06% - Rgr</td>
<td>120 mg+0.15% - Rgr</td>
</tr>
<tr>
<td>Minimum sample weight (according to USP), fine range</td>
<td>—</td>
<td>—</td>
<td>120 mg+0.06% - Rgr</td>
</tr>
<tr>
<td>Minimum sample weight (U=1%, k=2)</td>
<td>8 mg+0.003% - Rgr</td>
<td>8 mg+0.004% - Rgr</td>
<td>80 mg+0.01% - Rgr</td>
</tr>
<tr>
<td>Differential eccentric load deviation</td>
<td>—</td>
<td>—</td>
<td>8 mg+0.004% - Rgr</td>
</tr>
<tr>
<td>Weighing time</td>
<td>4 s</td>
<td>4 s</td>
<td>3.5 s</td>
</tr>
<tr>
<td>Weighing time, fine range</td>
<td>—</td>
<td>—</td>
<td>4 s</td>
</tr>
<tr>
<td>Interface update rate</td>
<td>23/s</td>
<td>23/s</td>
<td>23/s</td>
</tr>
<tr>
<td>Usable height of draft shield</td>
<td>235 mm</td>
<td>235 mm</td>
<td>235 mm</td>
</tr>
<tr>
<td>Weight of balance</td>
<td>9.1 kg</td>
<td>9.1 kg</td>
<td>9.1 kg</td>
</tr>
<tr>
<td>Number of built-in reference weights</td>
<td>2</td>
<td>2</td>
<td>2</td>
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</table>

**Weights for routine testing**

<table>
<thead>
<tr>
<th></th>
<th>OIML CarePac</th>
<th>ASTM CarePac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weights</td>
<td>50 g F2, 2 g E2</td>
<td>50 g 1, 2 g 1</td>
</tr>
<tr>
<td></td>
<td>#11123003</td>
<td>#11123010</td>
</tr>
</tbody>
</table>

sd = Standard deviation  
Rnt = Net weight (sample weight)  
Rgr = Gross weight  
a = Year (annum)

1) In the temperature range 10…30 °C

### Limit values

<table>
<thead>
<tr>
<th></th>
<th>XS204</th>
<th>XS105DU</th>
<th>XS205DU</th>
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</thead>
<tbody>
<tr>
<td>Maximum capacity</td>
<td>220 g</td>
<td>120 g</td>
<td>220 g</td>
</tr>
<tr>
<td>Readability</td>
<td>0.1 mg</td>
<td>0.1 mg</td>
<td>0.1 mg</td>
</tr>
<tr>
<td>Tare range (from…to)</td>
<td>0 … 220 g</td>
<td>0 … 120 g</td>
<td>0 … 220 g</td>
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<tr>
<td>Maximum capacity, fine range</td>
<td>—</td>
<td>41 g</td>
<td>81 g</td>
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<tr>
<td>Readability, fine range</td>
<td>—</td>
<td>0.01 mg</td>
<td>0.01 mg</td>
</tr>
<tr>
<td>Repeatability (at nominal load)</td>
<td>sd</td>
<td>0.1 mg (200 g)</td>
<td>0.1 mg (100 g)</td>
</tr>
<tr>
<td>Repeatability (at low load)</td>
<td>sd</td>
<td>0.07 mg (10 g)</td>
<td>0.05 mg (10 g)</td>
</tr>
<tr>
<td>Repeatability, fine range (at low load)</td>
<td>sd</td>
<td>—</td>
<td>0.02 mg (10 g)</td>
</tr>
<tr>
<td>Linearity deviation</td>
<td>0.2 mg</td>
<td>0.2 mg</td>
<td>0.2 mg</td>
</tr>
<tr>
<td>Eccentricity deviation (test load)</td>
<td>0.3 mg (100 g)</td>
<td>0.3 mg (50 g)</td>
<td>0.3 mg (100 g)</td>
</tr>
<tr>
<td>Sensitivity offset (test weight)</td>
<td>1 mg (200 g)</td>
<td>0.8 mg (100 g)</td>
<td>0.8 mg (200 g)</td>
</tr>
<tr>
<td>Sensitivity temperature drift 1)</td>
<td>0.00015%/°C</td>
<td>0.00015%/°C</td>
<td>0.00015%/°C</td>
</tr>
<tr>
<td>Sensitivity stability</td>
<td>0.0002%/a</td>
<td>0.0002%/a</td>
<td>0.0002%/a</td>
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### Typical values

<table>
<thead>
<tr>
<th></th>
<th>XS204</th>
<th>XS105DU</th>
<th>XS205DU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability</td>
<td>sd</td>
<td>0.04 mg</td>
<td>0.04 mg</td>
</tr>
<tr>
<td>Readability, fine range</td>
<td>sd</td>
<td>—</td>
<td>0.01 mg</td>
</tr>
<tr>
<td>Linearity deviation</td>
<td>sd</td>
<td>0.13 mg</td>
<td>0.13 mg</td>
</tr>
<tr>
<td>Eccentricity deviation (test load)</td>
<td>0.16 mg (100 g)</td>
<td>0.15 mg (50 g)</td>
<td>0.16 mg (100 g)</td>
</tr>
<tr>
<td>Sensitivity offset (test load)</td>
<td>0.8 mg (200 g)</td>
<td>0.4 mg (100 g)</td>
<td>0.6 mg (200 g)</td>
</tr>
<tr>
<td>Minimum sample weight (according to USP)</td>
<td>120 mg</td>
<td>120 mg</td>
<td>120 mg</td>
</tr>
<tr>
<td>Minimum sample weight (U=1%, k=2), fine range</td>
<td>—</td>
<td>30 mg</td>
<td>30 mg</td>
</tr>
<tr>
<td>Minimum sample weight (U=1%, k=2)</td>
<td>8 mg</td>
<td>8 mg</td>
<td>8 mg</td>
</tr>
<tr>
<td>Minimum sample weight (U=1%, k=2), fine range</td>
<td>—</td>
<td>2 mg</td>
<td>2 mg</td>
</tr>
<tr>
<td>Setting time</td>
<td>1.5 s</td>
<td>1.5 s</td>
<td>1.5 s</td>
</tr>
<tr>
<td>Setting time, fine range</td>
<td>—</td>
<td>3 s</td>
<td>3 s</td>
</tr>
</tbody>
</table>
### Dimensions

<table>
<thead>
<tr>
<th></th>
<th>XS204</th>
<th>XS105DU</th>
<th>XS205DU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance dimensions (WxDxH)</td>
<td>263x453x322 mm</td>
<td>263x453x322 mm</td>
<td>263x453x322 mm</td>
</tr>
<tr>
<td>Weighing pan dimensions</td>
<td>78x73 mm (WxD)</td>
<td>78x73 mm (WxD)</td>
<td>78x73 mm (WxD)</td>
</tr>
</tbody>
</table>

### Typical uncertainties and supplementary data

<table>
<thead>
<tr>
<th></th>
<th>XS204</th>
<th>XS105DU</th>
<th>XS205DU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeatability</td>
<td>sd 0.04mg +0.00015%·Rgr</td>
<td>0.04mg +0.00002%·Rgr</td>
<td>0.04mg +0.00002%·Rgr</td>
</tr>
<tr>
<td>Repeatability, fine range</td>
<td></td>
<td>0.01mg +0.00004%·Rgr</td>
<td>0.01mg +0.00003%·Rgr</td>
</tr>
<tr>
<td>Differential linearity deviation</td>
<td>sd $\frac{\sqrt{20\text{pg} \cdot \text{Rnt}}}{\text{Rnt}}$</td>
<td>$\frac{\sqrt{40\text{pg} \cdot \text{Rnt}}}{\text{Rnt}}$</td>
<td>$\frac{\sqrt{20\text{pg} \cdot \text{Rnt}}}{\text{Rnt}}$</td>
</tr>
<tr>
<td>Differential eccentric load deviation</td>
<td>sd 0.00008%·Rnt</td>
<td>0.00015%·Rnt</td>
<td>0.00008%·Rnt</td>
</tr>
<tr>
<td>Sensitivity offset</td>
<td>sd 0.0002%·Rnt</td>
<td>0.0002%·Rnt</td>
<td>0.00015%·Rnt</td>
</tr>
<tr>
<td>Minimum sample weight (according to USP)</td>
<td>120mg+0.045%·Rgr</td>
<td>120mg+0.06%·Rgr</td>
<td>120mg+0.06%·Rgr</td>
</tr>
<tr>
<td>Minimum sample weight (according to USP), fine range</td>
<td>-</td>
<td>30mg+0.12%·Rgr</td>
<td>30mg+0.09%·Rgr</td>
</tr>
<tr>
<td>Minimum sample weight (U=1%, k=2)</td>
<td>8mg+0.003%·Rgr</td>
<td>8mg+0.004%·Rgr</td>
<td>8mg+0.004%·Rgr</td>
</tr>
<tr>
<td>Minimum sample weight (U=1%, k=2), fine range</td>
<td>-</td>
<td>2mg+0.008%·Rgr</td>
<td>2mg+0.006%·Rgr</td>
</tr>
<tr>
<td>Weighing time</td>
<td>4 s</td>
<td>4 s</td>
<td>4 s</td>
</tr>
<tr>
<td>Weighing time, fine range</td>
<td>-</td>
<td>6 s</td>
<td>6 s</td>
</tr>
<tr>
<td>Interface update rate</td>
<td>23/s</td>
<td>23/s</td>
<td>23/s</td>
</tr>
<tr>
<td>Usable height of draft shield</td>
<td>235 mm</td>
<td>235 mm</td>
<td>235 mm</td>
</tr>
<tr>
<td>Weight of balance</td>
<td>9.1 kg</td>
<td>9.1 kg</td>
<td>9.1 kg</td>
</tr>
<tr>
<td>Number of built-in reference weights</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

### Weights for routine testing

<table>
<thead>
<tr>
<th>OIML CarePac</th>
<th>ASTM CarePac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weights</td>
<td>Weights</td>
</tr>
<tr>
<td>200 g F2, 10 g F1 #11123001</td>
<td>200 g F2, 10 g F1 #11123001</td>
</tr>
<tr>
<td>100 g F2, 5 g E2 #11123002</td>
<td>100 g F2, 5 g E2 #11123002</td>
</tr>
<tr>
<td>200 g F2, 10 g F2 #11123001</td>
<td>200 g F2, 10 g F2 #11123001</td>
</tr>
<tr>
<td>200 g 1, 10 g 1 #11123101</td>
<td>200 g 1, 10 g 1 #11123101</td>
</tr>
<tr>
<td>100 g 1, 5 g 1 #11123102</td>
<td>100 g 1, 5 g 1 #11123102</td>
</tr>
<tr>
<td>200 g 1, 10 g 1 #11123101</td>
<td>200 g 1, 10 g 1 #11123101</td>
</tr>
</tbody>
</table>

sd = Standard deviation
Rnt = Net weight (sample weight)
Rgr = Gross weight
\(a\) = Year (annum)

1) In the temperature range 10…30 °C
6.4 Dimensions

Dimensions in mm.
6.5 Interfaces

6.5.1 Specifications of RS232C

| Interface type: | Voltage interface according to EIA RS-232C/DIN 66020 (CCITT V24/V.28) |
| Max. cable length: | 15 m |
| Signal level: | Outputs: |
| | +5 V ... +15 V (RL = 3 – 7 kΩ) |
| | –5 V ... –15 V (RL = 3 – 7 kΩ) |
| | Inputs: |
| | +3 V ... 25 V |
| | –3 V ... 25 V |
| Connector: | Sub-D, 9-pole, female |
| Operating mode: | Full duplex |
| Transmission mode: | Bit-serial, asynchronous |
| Transmission code: | ASCII |
| Baud rates: | 600, 1200, 2400, 4800, 9600, 19200, 384001) (firmware selectable) |
| Bits/parity: | 7-bit/even, 7-bit/odd, 7-bit/none, 8-bit/none (firmware selectable) |
| Stop bits: | 1 stop bit |
| Handshake: | None, XON/XOFF, RTS/CTS (firmware selectable) |
| End-of-line: | <CR><LF>, <CR>, <LF> (firmware selectable) |

Pin 2: Balance transmit line (TxD)
Pin 3: Balance receive line (RxD)
Pin 5: Ground signal (GND)
Pin 7: Clear to send (hardware handshake) (CTS)
Pin 8: Request to send (hardware handshake) (RTS)

6.5.2 Specifications of "Aux" Connection

You can connect the METTLER TOLEDO "ErgoSens" or an external switch to sockets "Aux 1" and "Aux 2". This allows you to start functions such as taring, zeroing, printing and others.

External connection

| Connector: | 3.5 mm stereo jack connector |
| Electrical data: | Max. voltage 12 V |
| | Max. current 150 mA |
## 7 Accessories and Spare Parts

### 7.1 Accessories

You can increase the functionality of your balance with accessories from the METTLER TOLEDO range. The following options are available:

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Printers</strong></td>
<td></td>
</tr>
<tr>
<td>BT-P42 printer with Bluetooth connection to instrument</td>
<td>11132540</td>
</tr>
<tr>
<td>Paper roll, set of 5 pcs</td>
<td>00072456</td>
</tr>
<tr>
<td>Paper roll, self-adhesive, set of 3 pcs</td>
<td>11600388</td>
</tr>
<tr>
<td>Ribbon cartridge, black, set of 2 pcs</td>
<td>00065975</td>
</tr>
<tr>
<td>RS-P42 printer with RS232C connection to instrument</td>
<td>00229265</td>
</tr>
<tr>
<td>Paper roll, set of 5 pcs</td>
<td>00072456</td>
</tr>
<tr>
<td>Paper roll, self-adhesive, set of 3 pcs</td>
<td>11600388</td>
</tr>
<tr>
<td>Ribbon cartridge, black, set of 2 pcs</td>
<td>00065975</td>
</tr>
<tr>
<td>RS-P25 printer with RS232C connection to instrument</td>
<td>11124300</td>
</tr>
<tr>
<td>Paper roll, set of 5 pcs</td>
<td>00072456</td>
</tr>
<tr>
<td>Paper roll, self-adhesive, set of 3 pcs</td>
<td>11600388</td>
</tr>
<tr>
<td>Ribbon cartridge, black, set of 2 pcs</td>
<td>00065975</td>
</tr>
<tr>
<td>RS-P26 printer with RS232C connection to instrument (with date and time)</td>
<td>11124303</td>
</tr>
<tr>
<td>Paper roll, set of 5 pcs</td>
<td>00072456</td>
</tr>
<tr>
<td>Paper roll, self-adhesive, set of 3 pcs</td>
<td>11600388</td>
</tr>
<tr>
<td>Ribbon cartridge, black, set of 2 pcs</td>
<td>00065975</td>
</tr>
<tr>
<td>LC-P45 application printer with additional functions</td>
<td>00229119</td>
</tr>
<tr>
<td>Paper roll, set of 5 pcs</td>
<td>00072456</td>
</tr>
<tr>
<td>Paper roll, self-adhesive, set of 3 pcs</td>
<td>11600388</td>
</tr>
<tr>
<td>Ribbon cartridge, black, set of 2 pcs</td>
<td>00065975</td>
</tr>
<tr>
<td><strong>Optional interfaces</strong></td>
<td></td>
</tr>
<tr>
<td>Second RS232C Interface</td>
<td>11132500</td>
</tr>
</tbody>
</table>
Ethernet Interface for connection to an Ethernet network

BT option: Bluetooth Interface for multipoint connection for up to 6 Bluetooth devices

BTS option: Bluetooth Interface, single-point connection

PS/2 option: Interface for connecting commercial keyboards and barcode readers

LocalCAN option: Interface for connection of up to 5 LC (Local-CAN) instruments

MiniMettler option: Interface MiniMettler, for connection to older (legacy) METTLER TOLEDO systems

RS232 - USB converter cable – Cable with converter to connect a balance (RS232) to a USB port

Cables for RS232C interface

RS9 – RS9 (m/f): connection cable for PC, length = 1 m
RS9 – RS25 (m/f): connection cable for PC, length = 1 m 11101052

Cables for LocalCAN Interface

LC – RS9: Cable for connecting a PC with RS232C, 9-pin (f), length = 2 m 00229065

LC – RS25: Cable for connecting a printer or PC with RS232C, 25-pin (m/f), length = 2 m 00229050

LC – CL: Cable for connecting a device with METTLER TOLEDO CL interface (5-pin), length = 2 m 00229130

LC – LC2: Extension cable for LocalCAN, length = 2 m 00229115

LC – LC5: Extension cable for LocalCAN, length = 5 m 00229116

LC – LCT: Cable branch (T-connector) for LocalCAN 00229118

Cables for MiniMettler Interface

MM – RS9f: RS232C connection cable to MiniMettler interface, length = 1.5 m 00229029
**Cables for Terminal**

Terminal extension cable, length = 4.5 m  
Image of a cable  
11600517

**Cable, one-sided open (2-pin)**

Cable between balance and AC adapter, length = 4 m  
Image of a cable  
11132037

**Auxiliary displays**

BT-BLD Bluetooth auxiliary display for table mounting, 168 mm, LCD display with backlighting  
Image of a display  
11132555

LC/RS-BLD auxiliary display on bench stand, backlit (incl. RS cable and separate AC adapter)  
Image of a display  
00224200

RS/LC-BLDS auxiliary display for table or balance mounting, 480 mm, LCD display with backlighting  
Image of a display  
11132630

**Sensors**

ErgoSens, optical sensor for hands-free operation  
Image of a sensor  
11132601

**LC-Switchbox**

For connection of up to 3 balances with LocalCAN interface to a printer  
Image of a switchbox  
00229220
Footswitches

Footswitch with selectable function for balances (Aux 1, Aux 2) 11106741

LC-FS foot switch with selectable function for balances with LocalCAN interface 00229060

Filling-Process Control

LV11 automatic feeder for automatic loading of small items on the balance 21900608
LV11 Draft shield door 11106715
SQC14 filling process control
Compact instrument with printer for control of up to 16 articles 00236210
Compact instrument with printer for control of up to 60 articles 00236211

Universal AntiStatic Kit

Universal antistatic kit complete U-shaped, including electrode and power supply 11107767
Optional: Second U-electrode* 11107764
Optional: Point-electrode* 11107765
* Power supply for optional, second U-electrode 11107766
11107767, or for optional point-electrode 11107765

ErgoClips

Weighing kit for various weighing containers

ErgoClip Weighing kit 11106707
Delivery: 3 ErgoClips for Round-Bottom Flask, Weighing Boat and Tube, 20 Weighing Boat, 10 Single-use aluminium weighing pans.

ErgoClip "Basket" 11106747

ErgoClip "Titration Basket" 11106883
36 Accessories and Spare Parts

ErgoClip Syringe 30008288

ErgoClip Solution Kit 11140251

Single-use aluminium weighing pans, 10 units 11106711

SmardGrid Cover, chromium-nickel steel 11106709

Single-use weighing boats, 500 units 11106712

Grey drip tray 30038741

MinWeigh Door ideal for use with ErgoClip "Flask" 11106749

Density determination

Density kit 11106706
Sinker for density of liquids in conjunction with Density Kit 00210260
Calibrated (sinker + certificate) 00210672
Recalibrated (new certificate) 00210674

Calibrated thermometer with certificate 11132685

**Pipette Calibration**

Evaporation Trap, incl. adapter 11140043

Evaporation Trap large 11138440

1-channel suction pump complete
Hose 2 m for suction pump 11138268 11138132

Reagent reservoirs, 5 pcs. 11600616

Barometer 11600086

Precision thermometer with clip, not certified 00238767
Barcode Reader

**RS232C Barcode Reader**

The following accessories are needed for operation (not included):

- RS232 F cable: 21901305
- Null modem adapter: 21900924

Plus one of the following:

- AC adapter 5 V for EU: 21901370
- AC adapter 5 V for US: 21901372
- AC adapter 5 V for GB: 21901371
- AC adapter 5 V for AU: 21901370

+ 71209966

**RS232C Barcode Reader – Cordless**

The following accessories are needed for operation (not included):

- Cradle: 21901300
- RS232 F cable: 21901305
- Null modem adapter: 21900924

Plus one of the following:

- AC adapter 12 V for EU: 21901373
- AC adapter 12 V for US: 21901375
- AC adapter 12 V for GB: 21901374
- AC adapter 12 V for AU: 21901373

+ 71209966

**PS/2 Barcode Reader, without cable**

PS/2 wedge single cable: 21901297

**PS/2Y Barcode Reader, without cable**

PS/2 wedge twin (Y) cable: 21901297

Anti-theft devices

Steel cable: 11600361

Transport Cases

Transport case for analytical balances: 11106869
Protective Covers
Protective cover for terminal, "S" and "M" platform 11106870

Dust covers
Dust cover 30035838

Software
LabX Software for One Click™ Weighing Solutions on request
Enables you to perform One Click™ Standard Preparation, One Click™ Loss on Drying, One Click™ Sieve Analysis and many other applications.
Simply start the method with the One Click™ shortcut on the balance touchscreen. LabX guides you step-by-step through the SOP on the balance, performs your calculations automatically, and takes care of saving all your data. The complete solution can be tailored to match your process requirements.
Visit www.mt.com/one-click-weighing for more information Freeweigh.Net 21900895

Various
Terminal and printer stand, mounting on balance 11106730
Wall fixture for terminal 11132665
AC/DC adapter (without power cable) 100–240 VAC, 50/60 Hz, 0.3 A, 12 VDC 2.25 A

- Power cable CH: 00087920
- Power cable EU: 00087925
- Power cable US: 00088668
- Power cable IT: 00087457
- Power cable DK: 00087452
- Power cable GB: 00089405
- Power cable AU: 00088751
- Power cable ZA: 00089728
- Power cable BR: 30015268
- Power cable JL: 00225297
- Power cable IN: 11600569
- Power cable JP: 11107881
- Power cable TH, PE: 11107880

IP54 protective housing for AC adapter: 11132550

Level bubble mirror: 11140150

Weighing table: 11138042

Production Certificate "PRO": 11106895
### 7.2 Spare Parts

<table>
<thead>
<tr>
<th>Pos</th>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Side draft shield door</td>
<td>11106841</td>
</tr>
<tr>
<td>2</td>
<td>Top draft shield door</td>
<td>11106842</td>
</tr>
<tr>
<td>3</td>
<td>Front glass</td>
<td>11106843</td>
</tr>
<tr>
<td>4</td>
<td>Grid weighing pan cover</td>
<td>11106709</td>
</tr>
<tr>
<td>5</td>
<td>Grid weighing pan</td>
<td>11106333</td>
</tr>
<tr>
<td>6</td>
<td>Foot screw</td>
<td>11106323</td>
</tr>
<tr>
<td>7</td>
<td>Terminal support</td>
<td>11106539</td>
</tr>
<tr>
<td>8</td>
<td>Drip tray</td>
<td>11106449</td>
</tr>
</tbody>
</table>

**Diagram**

- 1: Side draft shield door
- 2: Top draft shield door
- 3: Front glass
- 4: Grid weighing pan cover
- 5: Grid weighing pan
- 6: Foot screw
- 7: Terminal support
- 8: Drip tray

**Additional Parts**

- Packaging complete: 11106849
- Export box: 11106860
8 Appendix

8.1 MT-SICS Interface Commands and Functions

Many of the instruments and balances used have to be capable of integration in a complex computer or data acquisition system.

To enable you to integrate balances in your system in a simple manner and utilize their capabilities to the full, most balance functions are also available as appropriate commands via the data interface.

All new METTLER TOLEDO balances launched on the market support the standardized command set “METTLER TOLEDO Standard Interface Command Set” (MT-SICS). The commands available depending on the functionality of the balance.

For further information please refer to the Reference Manual MT-SICS downloadable from the Internet under www.mt.com/xs-analytical

8.2 Procedure for Certified Balances

Preface
Certified balances are subject to the national, legal requirements of “non-automatic balances”.

Switching on the balance

- **Switching on**
  - Immediately after being switched on, the balance displays 0.000.. g.
  - The balance is always started up with the “Factory setting” unit.

- **Switch-on range**
  - At maximum 20% of the type load, otherwise overload is displayed (OIML R76 4.5.1).

- **Stored value as switch-on zero point**
  - It is not permissible to use a stored value as a switch-on zero point; the MT-SICS M35 command is not available (OIML R76 T.5.2).

Display

- **Display of the weight value**
  - The "e" certification value is always shown in the display and is specified at the model designation plate (OIML R76 T.3.2.3 and 7.1.4).
  - If the display increment is lower than the "e" certification value, this is variably displayed for the net, gross and weighed tare. (Graying of the digits or certification brackets) (OIML R76 T.2.5.4 and 3.4.1).
  - In accordance with guidelines, the tested display increment (certification value) is never lower than 1 mg (OIML R76 T.3.4.2).
  - At balances with d = 0.1 mg, the digits below 1 mg are displayed in gray. These digits in brackets are printed. In accordance with legal metrology requirements, this illustration does not affect the accuracy of the weighing results.
  - **Units of measurement**
    - The display and info unit are firmly set to g or mg (depending on the model).
    - The following applies for the "Custom unit":
      - No certification brackets.
      - The following names are blocked, this applies to upper and lower case letters.
        - All official units (g, kg, ct etc.).
        - All names with "o" which can be replaced by a zero (Qz, Qzt etc.).
• **Identification of the weight display**
  - Gross, net, tare and other weight values are accordingly marked (OIML R76 4.6.5).
    - Net for net when a tare value has been used.
    - B or G for gross.
    - T for the weighed tare.
    - PT for the specified tare.
    - * or diff for the difference between the net or gross.

• **Info field**
  - The info weight value is handled metrologically in the same way as the weight value in the main display.

**Printout (OIML R76 4.6.11)**
- If a tare value is entered manually (PreTare), the PreTare value is always printed along with the net value (PT 123.45 g).
- The printed weight values are identified in the same way as the weight value on the display.
  I.e. N, B or G, T, PT, diff or *, with differentiation.
  Example:
  Single-range balance.
  N 123.4[5] g
  PT 10.00 g → for PreTare
  G 133.4[5] g

  DR balance with 100.00 g fine range.
  N 80.4[0] g
  T 22.5[6] g → for weighed tare
  G 102.9[ ] g

**Balance functions**

• **Reset to zero**
  - The zero range is limited to a maximum of ± 2% of the full load (OIML R76 4.5.1).

• **Tare**
  - No negative tare values are permitted.
  - Tare immediate (TI) is not permitted, the MT-SICS TI command is not available (OIML R76 4.6.4).

• **1/xd**
  - **e = d**
    The 1/xd switchover is not permitted (OIML R76 3.1.2).
  - **e = 10d**
    This is only permitted in the case of the 1/10d switchover.
  - **e = 100d**
    Only the 1/10d and 1/100d switchover are permitted.
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GWP® – Good Weighing Practice™
The global weighing guideline GWP® reduces risks associated with your weighing processes and helps to
- choose the appropriate balance
- reduce costs by optimizing testing procedures
- comply with the most common regulatory requirements

www.mt.com/GWP