

Operating Instructions




METTLER TOLEDO SB Precision Balance



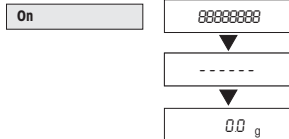
METTLER TOLEDO

www.mt.com/support

Short-form operating instructions

-  Press key **briefly**
-  Press and **hold** key until the desired display appears
-  Automatic procedure

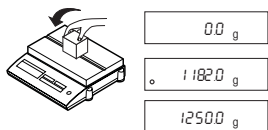
Switching on



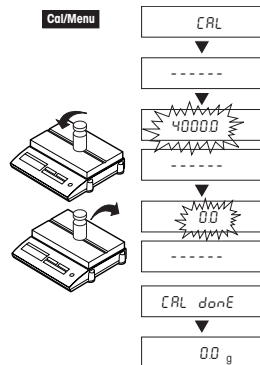
Switching off



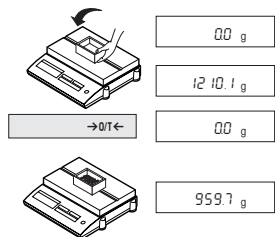
Simple weighing



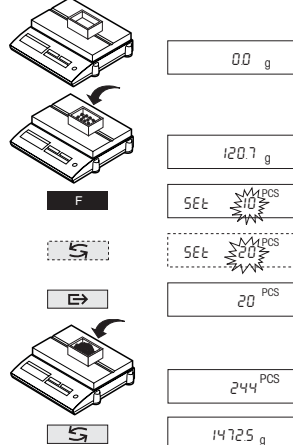
Adjusting (calibration)



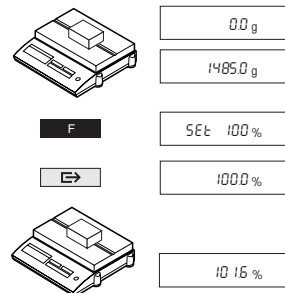
Taring



Piece counting*

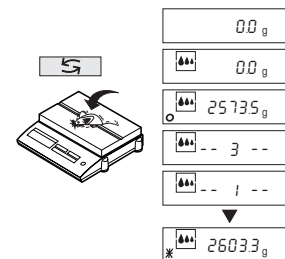


Percent weighing*

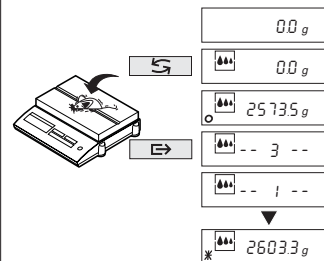


Dynamic weighing*

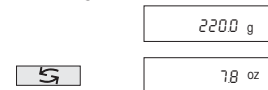
Automatic start (Dyn A)



Manual start (Dyn M)



Unit switching*



* These functions must be activated in the menu (section 4.1).

Contents

1	Getting to know your balance	4
1.1	Introducing the SB precision balances	4
1.2	Cautionary notes	5
1.3	Layout of the SB balances	6
1.4	The keys of the SB balances (overview)	7
2	Startup	8
2.1	Unpacking / standard equipment	8
2.2	Setting up	8
2.3	Adjusting (calibration)	10
3	Weighing	11
3.1	On/off switching	11
3.2	Simple weighing	11
3.3	Taring	12
3.4	METTLER TOLEDO DeltaRange balances	12
4	Menu	13
4.1	Overview	13
4.2	Description of the menu options	14
5	Functions	18
5.1	Piece counting	18
5.2	Percent weighing	19
5.3	Dynamic weighing	20
5.4	Switching weight units	21
6	Technical data and optional equipment	22
6.1	Technical data	22
6.2	Interface	23
6.3	Optional equipment	23
6.4	Dimensional drawing (in mm)	24
7	Appendix	25
7.1	Printout examples with LC-P45, RS-P42 and RS-P26 Printers	25
7.2	What if...?	26
7.3	Maintenance and cleaning	27

1 Getting to know your balance

Thank you for choosing a METTLER TOLEDO balance.

1.1 Introducing the SB precision balances



The SB family of precision balances comprises a range of precision balances which differ from each other in relation to their weighing range and resolution.

- Range of weighing 8.1 kg to 32.1 kg.
- Readability of 0.1 g to 1 g

In addition to **basic weighing operations** such as weighing, taring and adjusting (calibration), the following **functions** can be activated (section 5):

- Piece counting
- Percent weighing
- Dynamic weighing for unstable weighing samples.

SB balances can be optimally matched to the ambient conditions through appropriate setting of the **vibration adapter** (section 4.2.3).

METTLER TOLEDO **DeltaRange** balances also have a movable fine range with 10 times smaller display increments (section 3.4).

All SB balances are fitted with an RS232C interface as standard (section 6.2).



Note

- Certified versions of the SB balances are also available, please ask your METTLER TOLEDO dealer for details.

1.2 Cautionary notes

Always operate and use your balance only in accordance with the instructions contained in this manual.

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, protection of the instrument may be impaired.



It is not permitted to use the balance in hazardous environments¹⁾.

¹⁾ With the **PS-EX2 power supply unit** available as an **accessory**, all SB balances can be used in **hazard zone 2** (section 6.3).



Use only the AC adapter delivered with your balance, and check that the voltage printed on it is the same as your local power supply voltage. If it does not, contact your local dealer.

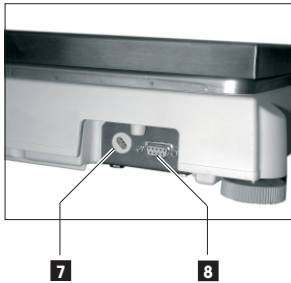


- Use only with a tested AC adapter with SELV output current.
- SB balances may only be used indoors in a dry environment.
- Do not use sharply pointed objects to operate the keyboard of your balance!
- Although your balance is very ruggedly constructed, it is nevertheless a precision instrument. Treat 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.

1.3 Layout of the SB balances



- 1 Keys
- 2 Display
- 3 Model plate¹⁾
- 4 Weighing pan
- 5 Leveling control
- 6 Leveling feet
- 7 AC adapter socket
- 8 RS232C interface
- 9 Provision for antitheft device



¹⁾ With details of

Max = maximum capacity

d = readability

* Min = minimum capacity (recommended minimum load for certified balances)

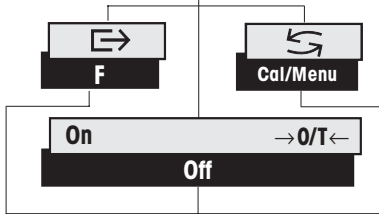
* e = verification scale interval (smallest display increment tested in certification)

* Relevant only for certified balances

1.4 The keys of the SB balances (overview)



Press key **briefly**



Press and **hold** key until the desired display appears

SB balances have two operator control levels: the **weighing mode** and the **menu**. The keys have different meanings, depending on the operator control level and how long a key is pressed.

Weighing mode (operation)									
Press briefly	Press and hold								
<table border="1"> <tr> <td>On</td> <td>• Switch on</td> </tr> <tr> <td>→0/T←</td> <td>• Tare</td> </tr> </table>	On	• Switch on	→0/T←	• Tare	<table border="1"> <tr> <td>Off</td> <td>• Switch off</td> </tr> </table>	Off	• Switch off		
On	• Switch on								
→0/T←	• Tare								
Off	• Switch off								
<table border="1"> <tr> <td>↻</td> <td>• Switch</td> </tr> <tr> <td>↻</td> <td>• Change settings</td> </tr> </table>	↻	• Switch	↻	• Change settings	<table border="1"> <tr> <td>F</td> <td>• Call function A function must be activated in the menu, otherwise "F nonE" appears in th display.</td> </tr> </table>	F	• Call function A function must be activated in the menu, otherwise "F nonE" appears in th display.		
↻	• Switch								
↻	• Change settings								
F	• Call function A function must be activated in the menu, otherwise "F nonE" appears in th display.								
<table border="1"> <tr> <td>⇒</td> <td>• Print</td> </tr> <tr> <td>⇒</td> <td>• Confirm settings</td> </tr> </table>	⇒	• Print	⇒	• Confirm settings	<table border="1"> <tr> <td>Cal/Menu</td> <td>• Adjust (calibrate)</td> </tr> <tr> <td>Cal/Menu</td> <td>• Call menu</td> </tr> </table>	Cal/Menu	• Adjust (calibrate)	Cal/Menu	• Call menu
⇒	• Print								
⇒	• Confirm settings								
Cal/Menu	• Adjust (calibrate)								
Cal/Menu	• Call menu								

Menu (called up with Cal/Menu)					
Press briefly	Press and hold				
<table border="1"> <tr> <td>→0/T←</td> <td>• Abort</td> </tr> </table>	→0/T←	• Abort	—		
→0/T←	• Abort				
<table border="1"> <tr> <td>↻</td> <td>• Change settings</td> </tr> </table>	↻	• Change settings	—		
↻	• Change settings				
<table border="1"> <tr> <td>⇒</td> <td>• Select menu options</td> </tr> </table>	⇒	• Select menu options	<table border="1"> <tr> <td>Cal/Menu</td> <td>• Store and quit menu</td> </tr> </table>	Cal/Menu	• Store and quit menu
⇒	• Select menu options				
Cal/Menu	• Store and quit menu				

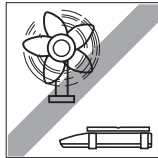
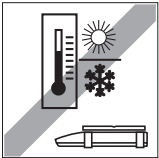
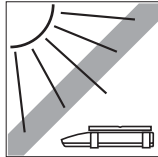
2 Startup

2.1 Unpacking / standard equipment

All SB balances are supplied in an environmentally harmless package. The standard equipment of the SB balances includes:

- **AC adapter**, to national codes,
- **Weighing pan**
- **Protective cover**, mounted
- **Operating instructions**, to allow optimum utilization of the capabilities of your balance,
- **EC declaration of conformity**

2.2 Setting up



The optimum location

The correct location makes an important contribution to the accuracy of the weighing results of precision balances.

Hence, ensure a

- stable, vibration-free position as horizontal as possible.
- the surface must be able to safely carry the weight of a fully loaded balance.

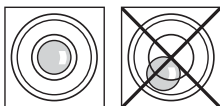
Avoid

- direct sunlight,
- excessive temperature fluctuations,
- powerful drafts (e.g. from fans or air conditioners)



Note

If vibrations can not be prevented, the balance can still provide accurate results if the vibration adapter is set accordingly, see section 4.2.3.



Leveling

To assure repeatable weighing results at all times, the balance must be exactly horizontal. To compensate minor unevenness at its location, the balance can be leveled:

→ Turn the leveling feet of the balance housing until the air bubble is in the center of the level control.



Note

The balance must be relevelled each time its location is changed.



Connecting to the power supply

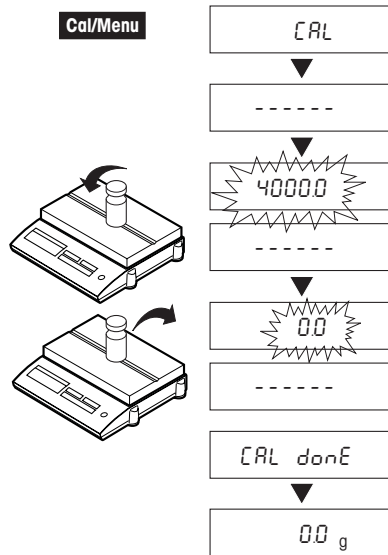
- Before connection of the AC adapter, check that the imprinted voltage value matches the local supply voltage. If this is not the case, please contact your local METTLER TOLEDO dealer.
- Plug AC adapter into AC adapter socket of the balance and connect to the power supply. The balance performs a self-test. The test is finished when "OFF" appears.
- Press **On** briefly: balance is in operational readiness. Before any work is performed with the balance, it must be adjusted (calibrated), (section 2.3).



Note

The PP-B10 PowerPack (rechargeable, external battery) can be used to operate all B balances independently of the power supply (section 6.3).

2.3 Adjusting (calibration)



To obtain accurate weighing results, the balance must be matched to the acceleration due to gravity at its location.

Adjusting is necessary

- before the balance is used for the first time,
- at regular intervals during weighing operations,
- after a change in location.

Procedure

To obtain accurate results, before adjusting the balance must be switched on for 20–30 minutes so that the operating temperature will be reached.

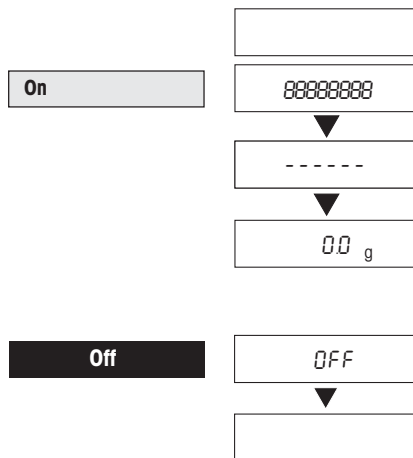
- Have required adjusting weight ready (section 6.1).
- Unload weighing pan.
- Press and hold **Cal/Menu** until "CAL" appears in the display, release key. The required adjusting weight value flashes in the display.
- Place adjusting weight in center of pan. The balance adjusts itself.
- When "0.00" flashes, remove adjusting weight. The adjusting (calibration) is finished when "0.00 g" appears in the display. The balance is again in the weighing mode and ready for operation.

Notes

- Depending on national certification specifications, the adjusting may be locked with **certified balances** after the installation.
- The adjustment can be terminated at any time using the **→0T←** key. The following message appears: Abort.

3 Weighing

3.1 On/off switching



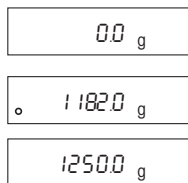
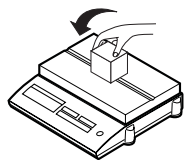
Switching on

- Remove any load from weighing pan and press **On** briefly. The balance performs a display test. When zero is displayed, the balance is ready for operation.

Switching off

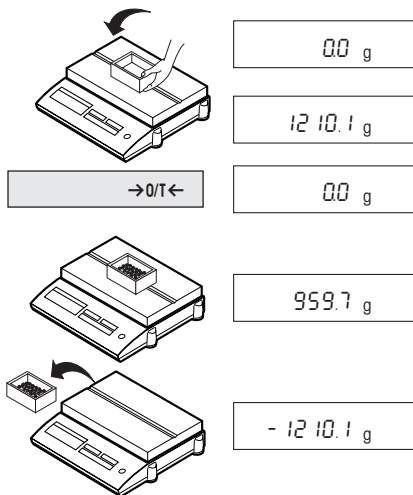
- Press and hold **Off** until "OFF" appears in the display. Release key.

3.2 Simple weighing



- Place weighing sample on the weighing pan.
- Wait until the stability detector "o" disappears.
- Read result.

3.3 Taring




→ Place empty container on the balance.

→ The weight is displayed.

→ Tare: press  briefly.

→ Add weighing sample to container, the net weight is displayed.

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

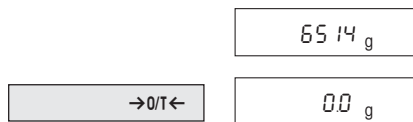
The tare weight remains store until  is again pressed or the balance is switched off.



Note

With METTLER TOLEDO DeltaRange balances, the fine range with its 10 times smaller display increments is again available after every taring operation.

3.4 METTLER TOLEDO DeltaRange balances



METTLER TOLEDO **DeltaRange balances** have a movable fine range with 10 times smaller display steps. In this range there is always an additional decimal place in the display.

The balance operates in the fine range

- after switching on,
- after every taring operation.

If the fine range is exceeded (section 6.1), the balance display automatically switches to greater display steps.

4 Menu

4.1 Overview

You can use the menu to activate functions (F) and change the balance settings. With **certified** balances/scales, the unit selection can be blocked following installation if required by national legislation. A detailed description of the menu options is given in sections 4.2.

Entry into menu

Press and hold **Cal/Menu** until "MENU" appears in the display. Release key, the 1st menu option "rESEt" appears.

Select menu options

Press **↔** briefly. Press key repeatedly to view the current balance settings.

Modify settings

Press **S** repeatedly until the desired setting appears.

Store settings

Press and hold **Cal/Menu** until "StorEd" appears. Release key, the balance returns to the weighing mode.

Abort

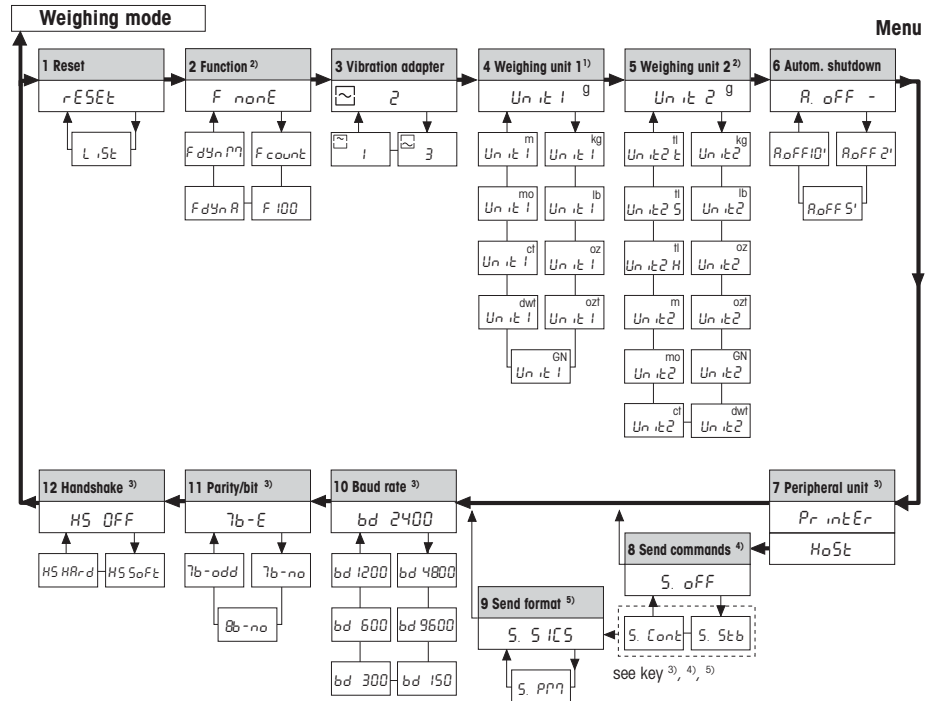
Press **←0/T←** briefly. The balance returns to the weighing mode without storing the changes.

Note


If no entry is made within 45 seconds, the balance returns to the weighing mode without storing the changes.

Key


- 1) With certified balances, these menu options have a fixed setting and can not be changed.
- 2) With certified balances, only the weighing units/functions allowed by the respective national weights and measures legislation may be selected.
- 3) These menu options are shown only if your balance is equipped with an RS232C interface.
- 4) These menu options are shown only if "HoSt" has been selected in menu option 4.2.7.
- 5) These menu options are shown only if "S.Stb" or "S.Conf" has been selected in menu option 4.2.8.





4.2 Description of the menu options


























4.2.1 Reset and printout of the balance setting

Reset balance setting and functions to factory setting (rESEt)

→ Select "rESEt" and press and hold **Cal/Menu** until "r done" is displayed.

The balance is now reset to the factory setting and returns to the weighing mode.

F nonE	no function activated	PrintEr	Attachment to printer or host
2	normal balance environment	bd2400	Transmission rate
Unit 1	g	7b-E	Character format
Unit 2	g	HS oFF	Transmission protocol
A. oFF – no automatic shutdown			

Printing out the balance setting (LISt)

→ Select "LISt" and press and hold **Cal/Menu** until "StorEd" is displayed.

The current balance setting is printed out and stored.

4.2.2 F... – Selecting function of F key (detailed description in section 5)

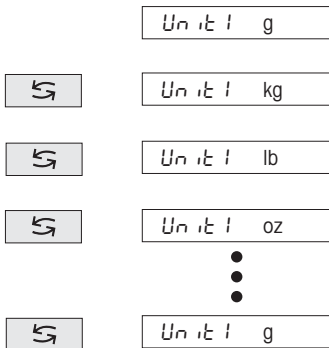
In addition to simple weighing, the following functions can be selected:

F nonE	No function, simple weighing (factory setting)
F count	Piece counting
F 100 %	Percent weighing
F dYn A	Dynamic weighing with automatic start
F dYn M	Dynamic weighing with manual start

4.2.3 Setting the vibration adapter

You can use the vibration adapter to match the balance to the ambient conditions.

2	Setting with normal balance surroundings (factory setting).
3	Setting with unstable balance surroundings. The balance operates slower but is less sensitive to external influences (drafts, vibrations, etc.).
1	Setting with very stable balance surroundings. The balance operates very quickly but is sensitive to external influences (drafts, vibrations, etc.).



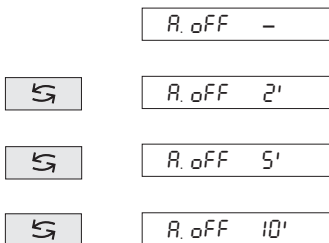
4.2.4 Selecting unit 1

Depending on requirements, the balance can operate with the following units:

Unit	Conversion factor	Comments
g	gram	factory setting
kg	kilogram	
lb	pound	
oz	ounce	
ozt	troy ounce	
GN	grain	not with 1 g balances
dwt	pennyweight	
ct	carat	
mg	milligram	
mo	momme	
m	Mesghal	
H tl	Hong Kong taels	selectable only in unit 2
S tl	Singapore taels	selectable only in unit 2
t tl	Taiwan taels	selectable only in unit 2

4.2.5 Selecting unit 2

If the weighing results should be shown in a different unit in the weighing mode by pressing (see section 5.4), the appropriate unit must be selected in the menu.

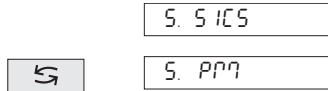
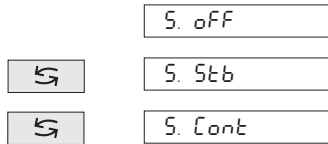
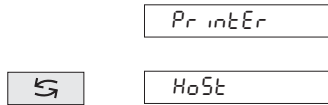


4.2.6 A. oFF – automatic shutdown

The automatic shutdown extends the operating time in line-independent operation with the PP-B10 PowerPack considerably.

When the automatic shutdown is activated, the balance switches itself off if no weighing has been performed during the specified time. With the PowerPack the balance is then off, without the PowerPack it is on standby.

- A. oFF – no automatic shutdown (factory setting)
- A. oFF 2 automatic shutdown after 2 minutes
- A. oFF 5 automatic shutdown after 5 minutes
- A. oFF 10 automatic shutdown after 10 minutes



4.2.7 Selecting peripheral device

In this menu option you can select the desired peripheral device. The balance automatically stores the appropriate settings for every peripheral device.

Printer	Attachment to a printer (e.g. METTLER TOLEDO RS-P26 Printer), (section 6.2). Factory setting: bd 2400, 7b-E, HS oFF
Host	Attachment to any peripheral device. Factory setting: bd 9600, 8b-no, HS SoFt

4.2.8 Selecting data transfer mode

In this menu block you tell the balance how a value should be transferred to a peripheral device (e.g. computer). This menu option appears only if the setting "HoSt" has been selected in the menu option "Selecting peripheral device".

S. oFF	Data transfer mode switched off
S. Stb	The next possible stable value will be transferred after triggering of the Print/Transfer command.
S. Cont	All values will be automatically transferred.

4.2.9 Selecting data transfer format

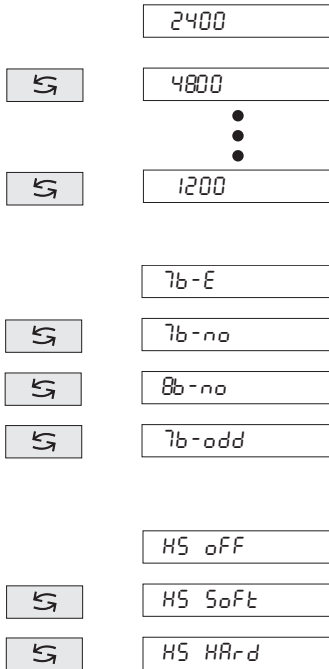
With the "S. SICS" setting the data transfer formats described in MT-SICS are used. You will find the description in the "reference manual MT-SICS 11780447" downloadable from the internet under www.mt.com/SB.

With the "S. PM" setting the following data transfer formats of the PM balances are used.

S. Stb:	-----1.67890-g
S. Cont:	S-----1.67890-g
	SD---1.39110-g

Notes

- If you wish to use other data transfer formats of the PM balances with your SB-balance, please use the optional B-M emulation software which emulates all interface commands of the PM balances (see section 6.3).
- The interface is unidirectional. Incoming interface commands in the setting "S. PM" are not processed further.



4.2.10 Setting baud rate (data transmission rate)

The data transmission rate (baud rate) determines the speed of the transmission via the serial interface. The unit is baud (1 baud (bd) = 1 bit/second).

The following settings are available: 150 bd, 300 bd, 600 bd, 1200 bd, 2400 bd, 4800 bd and 9600 bd.

4.2.11 Setting parity/bits

In this menu option you can set the character format for the attached peripheral device.

7b-E 7 bits/even parity

7b-no 7 bits/no parity

8b-no 8 bits/no parity

7b-odd 7 bits/odd parity

4.2.12 Setting handshake

This menu option allows you match the data transmission to different serial receivers.

HS oFF No handshake

HS SoFt Software handshake (XON/XOFF)

HS HARd Hardware handshake (DTR/CTS)

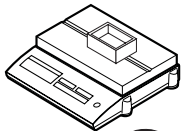
Note



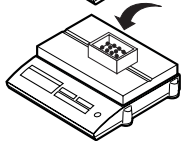
If you have selected the setting "HS HARd", the attached peripheral device must be switched on. If it is switched off, the balance is blocked.

5 Functions

5.1 Piece counting



00 g



120.7 g

F

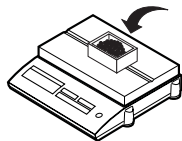
SEt 10 PCS

5

SEt 20 PCS

⇒

20 PCS



244 PCS

5

1472.5 g

5

244 PCS

Requirement


The function "F count" must be activated in the menu, see section 4.

→ Place empty container on the balance and tare: press  briefly.

Setting the reference

A reference weight (reference) must first be entered for piece counting.

→ Add reference parts to container, possible reference numbers are 10, 20, 30, 50, 100 and 5.

→ Press and hold  until "SEt ... PCS" is displayed.

→ Press  repeatedly until the display matches the loaded reference number.

→ Press  briefly to confirm reference or automatic acceptance after 2 seconds. The current piece number (PCS = pieces) is displayed.




Note

The current reference weight remains stored until the reference is reset or the power supply is interrupted.

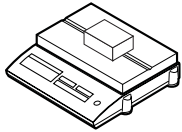
Counting / switching

→ Add weighing sample to the container and read piece number.

→ Press  briefly, the weight is displayed.

→ Return to display of the piece number: press  again.

5.2 Percent weighing



F

↵

0.0 g

1485.0 g

SEt 100 %

100.0 %

Requirement

The function "F 100 %" must be activated in the menu (see section 4).

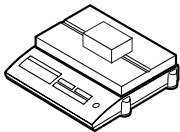
Set target weight

- Place target weight in center of pan.
- Press and hold **F** until "SEt 100 %" appears in the display.
- Press **↵** briefly to confirm or automatic acceptance after 2 seconds. The target weight is specified.



Note

The current target weight remains stored until a new target weight is set or the power supply is interrupted.



↵

↵

10 1.6 %

1508.8 g

10 1.6 %

Percent weighing / switching

- Place weighing sample in center of pan.
The weight of the sample is displayed as a percentage of the target weight.
- Press **↵** briefly, the weight is displayed.
- Return to display in percent: press **↵** briefly again.

5.3 Dynamic weighing

Dynamic weighing is suitable for the weighing of unstable weighing samples. The mean value of the weighing results is determined over a specified time period (weighing time). The more unstable the weighing sample, the longer the selected weighing time.



Requirement

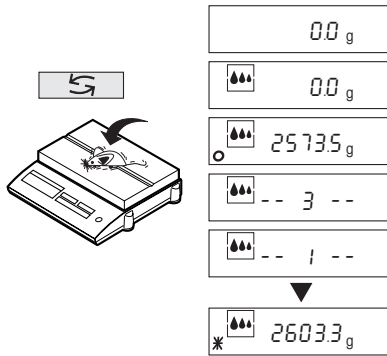
"F dYn A" for automatic start or "F dYn M" for manual start must be activated in the menu (section 4).
Factory setting is a weighing time of 3 seconds ($t = 3''$).

Tare container

→ Tare:  key.

Dynamic weighing with automatic start (F dYn A)

- Select dynamic weighing with the  key. The display shows the symbol .
- Load weighing sample. As soon as the balance is relatively stable, weighing starts automatically. During the weighing time, a "count down" runs in the display.





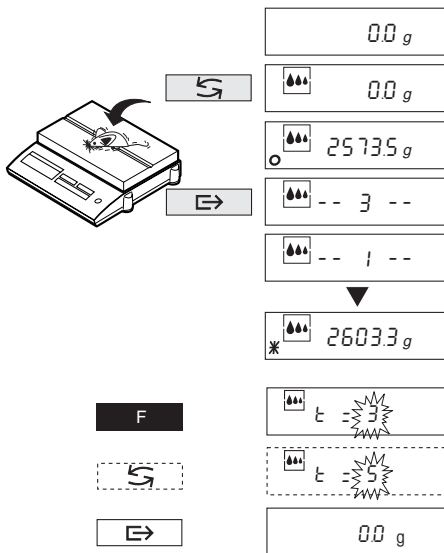
→ Read off result.

The result of the dynamic weighing is displayed with * (= calculated value) and remains in the display until the weighing sample is removed from the weighing pan or the container.




Notes

- The weighing cycle with the same weighing sample can be restarted with the  key.
- The  key can be used to switch between dynamic weighing and normal weighing.
- For weighing goods below 5 g, use dynamic weighing with **manual** start.



Dynamic weighing with manual start (F dYn M)

- Place empty container on the balance and tare. Press **→0/T←**.
- Switch to dynamic weighing. Press **S**. The display shows .
- Add weighing sample to container.
- Start weighing with **E**.
- During the weighing time, a "count down" runs in the display.

- Read off result.
- The result of the dynamic weighing is indicated by * (= computed value) and remains in the display until the weighing sample is removed from the weighing pan.

Changing the weighing time

- Press and hold **F** until "t = 3" appears in the display.
- Press **S** repeatedly until the desired weighing time appears. Possible values are 3", 5", 10", 20", 1", 2".
- Press **E** briefly to confirm selection or by automatic acceptance after 2 seconds.



Note

The set weighing time remains stored until it is reset or the power supply fails.

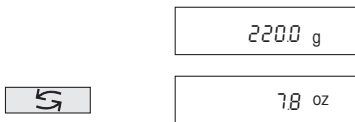
Requirement

Different weight units must be activated in the menu for unit 1 and unit 2 (section 4). This function is not available with dynamic weighing.

Switching between unit 1 and unit 2

- Press **S** briefly. Switching between weight units may be blocked with certified balances, depending on the national weights and measures legislation.

5.4 Switching weight units



6 Technical data and optional equipment

6.1 Technical data

Standard equipment

- Protective cover
- AC adapter to national codes
(Power supply: 115 V/230 V, -20/+15%, 50/60 Hz, 65/30 mA, 6 VA)
(Power supply balance: 8–14.5 V, 50/60 Hz or 9.5–20 V = 1.5 VA)
- RS232C interface

Degree of protection

- Protects against dust and water.
- Pollution degree: 2
- Overvoltage category: II

Ambient conditions

The technical data are valid under the following ambient conditions:

- Ambient temperature 10 °C ... 30 °C
- Relative atmospheric humidity 15 % ... 80 % at 31 °C, linear decreasing to 50 % at 40 °C noncondensing

The operability is assured between ambient temperatures 5–40°C.

	SB8001	SB12001	SB16001	SB16001DR DeltaRange	SB24001DR DeltaRange	SB32001DR DeltaRange	SB8000	SB16000	SB32000
Readability	0.1 g	0.1 g	0.1 g	0.1 g*/1 g	0.1 g*/1 g	0.1 g*/1 g	1 g	1 g	1 g
Maximum capacity	8100 g	12100 g	16100 g	3200 g*/16100 g	4800 g*/24100 g	6400 g*/32100 g	8100 g	16100 g	32100 g
Repeatability (sd)	0.1 g	0.1 g	0.1 g	0.1 g*/0.5 g	0.1 g*/0.5 g	0.1 g*/0.5 g	0.5 g	0.5 g	0.5 g
Linearity	0.2 g	0.3 g	0.3 g	0.3 g*/0.5 g	0.3 g*/0.5 g	0.3 g*/0.5 g	0.5 g	0.5 g	0.5 g
Adjusting weight ¹⁾	4 kg	4 kg	4 kg	4 kg	4 kg	4 kg	4 kg	4 kg	4 kg
Adjusting weight with certified balances ¹⁾	8 kg	12 kg	16 kg	16 kg	24 kg	32 kg	8 kg	16 kg	32 kg
Overall dimensions (WxDxH) in mm	381x321x92								
Weighing pan in mm	349x232								
Net weight (with packaging)	6.8 kg (8.3 kg)								

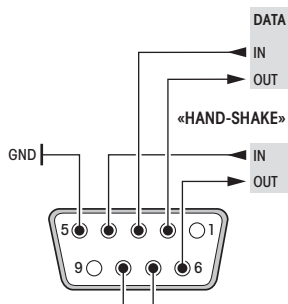
* Fine range values (DeltaRange)

¹⁾ Optional equipment

6.2 Interface

RS232C interface and interface accessories

Every SB balance is fitted with an RS232C interface for attachment to a peripheral device (e.g. printer or PC with a 9-pin male connector). Matching to a different device can be carried out in the menu (sections 4.2.7–4.2.12).



You will find a detailed description of the available interface commands in the brochure "Reference Manual MT-SICS Basic-S balances 11780447" available from your METTLER TOLEDO dealer or download from the Internet (www.mt.com/SB).

The wide range of features of the SB balances regarding documentation of the results can not be exploited to the full until a printer, e.g. the RS-P42, RS-P26 or LC-P45 from METTLER TOLEDO is attached. The printed results make a decisive contribution to a simple way of working in compliance with GLP/GMP.

6.3 Optional equipment

AC adapters

Euro	(230 V)	00228063
Euro (ground contact)	(230 V)	00228198
UK	(240 V)	00228066
US	(120 V)	00228064
Japan	(100 V)	00228065
Australia (bench version)	(240 V)	00228190

PowerPack PP-B10

Line-independent, rechargeable external power source, for 10 hours weighing operation (see section 4.2.6)

00224500

Adjustment weights

Available as **OIML** weights (E1, E2, F1, with calibration certificate) For further details see METTLER TOLEDO Weights brochure

11795461

or see www.mt.com/weights

Connection plate PowerPack/balance

Long	00230166
Short	00230168

Hook for weighing below the balance 21301097

Interface cable

• RS9-RS25: (m/f), length 2 m	11101052
• RS9-RS9: (m/f), length 1 m	11101051
• RS9-RS9: (m/m), length 1 m	21250066

Printers with normal paper

- Application printer **LC-P45**, 24 characters, with additional functions (time, date, statistic and multiplier) 00229119
- Simple printer **RS-P42**, 24 characters, without time/date 00229265
- Simple printer **RS-P26**, 24 characters, with time/date 12120788

Transport case

Accommodation for balance and PowerPack 00230031

Protective covers (Set of 3) 00230018

Hazard Zone 2

Standard SB models are not compliant for Hazard Zones 0, 1 or 2.

For Explosion Zone 2, only the special versions ../02 and ../03 (same features) are ready for compliance.

It is not allowed to use them for EX-Zone 1 and 0.

Following accessories are available for the use of the balance in Explosion Zone 2:

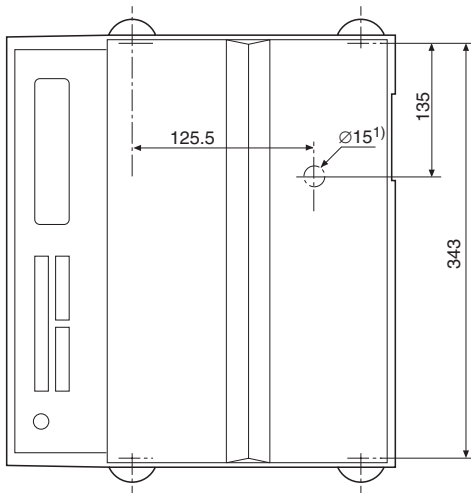
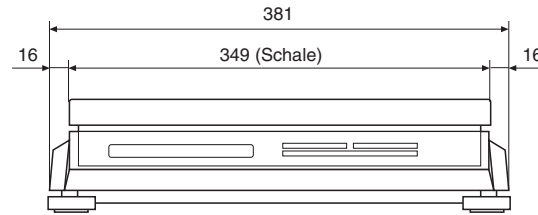
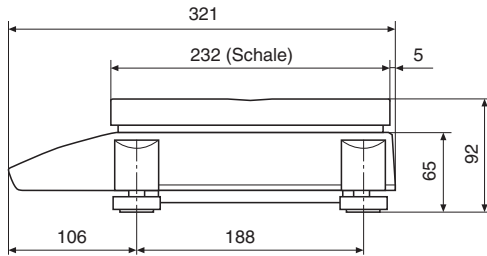
- Special AC adapter PS-EX2 (compulsory) 21200182
- Optical isolator RS-OPTOEX2 for data export 00224265

Anti theft device (Cable with lock) 00230018

B-M emulation 21301730

Software EPROM for the use of SB balances in systems together with METTLER TOLEDO PM balances

6.4 Dimensional drawing (in mm)



¹⁾ Opening for hanger

7 Appendix

7.1 Printout examples with LC-P45, RS-P42 and RS-P26 Printers

• Functions triggered by balance

Function: **Adjusting**

```

-- BALANCE CALIBRATION -
Date: .....
Time: .....

METTLER TOLEDO
Balance
Type:          SB16001DR
SNR:          1116150017

Weight ID: .....
Weight:        4000.0 g

Ext. calibration done

Signature:
.....
----- END -----

```

Function: **Piece counting** Printout of reference weight

```

---- PIECE COUNTING ----

APW      100.000000 g
Out of:   10 PCS

          110 PCS

Net      1100.1 g

----- END -----

```

Function: **List**

Printout of the current balance settings

```

----- LIST -----
Date: .....
Time: .....

METTLER TOLEDO
Balance
Type:          SB16001DR
SNR:          1116150017

SW-Ver.: 1.70 2.0
Func.: none
Vibr.: 2
Unit 1: g
Unit 2: g
A.Off: -
Output: Printer
Baud: 2400
Bit: 7
Parity: even
Handshake:off
----- END -----

```

Function: **Percent weighing** Printout of reference weight

```

950.0 g = 100 %
1100.0 %

```

• Functions triggered by printer

Function: **Adjusting** ¹⁾

With automatic insertion of date and time

```

-- BALANCE CALIBRATION -
08.04.97      15:13:37

METTLER TOLEDO
Balance
Type:          SB16001DR
SNR:          1116150017

Weight ID: .....
Weight:        4000.0 g

Ext. calibration done

Signature:
.....
----- END -----

```

Function: **Verification** ²⁾

With automatic insertion of date and time, with fixed weight (calibration weight)

```

---- BALANCE TEST ----
08.04.97      15:14:22

METTLER TOLEDO
Balance
Type:          SB16001DR
SNR:          1116150017

Weight ID: .....

Target: .....
Actual: 4000.1 g
Diff: .....

External test done

Signature:
.....
----- END -----

```

Function: **Statistics** ²⁾

```

08.04.97      15:18:55
ID            45.698-3
SNR:         1116150017

1            1000.0 g
2            1000.1 g
3            1000.1 g
4            1000.0 g
5            1000.0 g
n            5
x            1000.04 g
s            0.05 g
srel        0.1 %
min.        1000.0 g
max.        1000.1 g
dif.        00.1 g

----- END -----

```

Function: **Multiplier** ²⁾ With rounding to the nearest 5.

```

08.04.97      15:21:50
ID            45.698-3
SNR:         1116150017

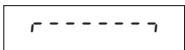
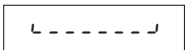

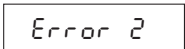
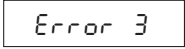
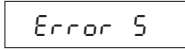

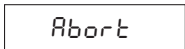

Factor       1.650
             999.9 g
*            1649.835

```

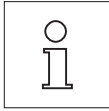
¹⁾ possible only with LC-P45 and RS-P26

²⁾ possible only with LC-P45

7.2 What if...?

Error/error message	Cause	Rectification
	Overload	→ Remove sample from weighing pan, rezero (tare).
	Underload	→ Check whether weighing pan is positioned properly.
	No stability <ul style="list-style-type: none"> • in taring or adjusting (calibration) • when reference weight for piece counting or percent weighing is placed on the pan 	→ Wait for stability before pressing key. → Ensure more stable ambient conditions.
	No or wrong adjusting weight on pan	→ Place required adjusting weight in center of pan.
	Reference weight or reference number too small	→ Increase reference weight or piece number.
	Balance/scale software not sufficiently up-to-date for operation with LC-B interface.	→ To change the balance/scale software 299702 (Order No. 600150), ask your METTLER TOLEDO dealer.
	Wrong or no weighing pan	→ Mount correct weighing pan.
	Abort of the adjustment using the  key.	

7.3 Maintenance and cleaning



Service

Regular servicing of your balance by a service technician prolongs its working life. Ask your METTLER TOLEDO dealer for details of servicing options.

Cleaning

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



Please observe the following notes

- On no account use cleaning agents, which contain solvents or abrasive ingredients, as this can result in damage to the terminal overlay.
- After working with chemicals, it is advisable to wash or clean the weighing pan and the bottom plate. Although all materials are of high quality, corrosion may occur if corrosive substances are deposited on chrome steel for an extended period of time (and if air is excluded, for example by a coating of grease).
- Ensure that no liquid comes into contact with the balance or the AC adapter!
- Never open the balance or AC adapter – they contain no components, which can be cleaned, repaired or replaced by the user.
- Soiled protective covers can be replaced on all balance types (see Optional equipment).



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.

**To protect your METTLER TOLEDO product's future:
METTLER TOLEDO Service assures the quality, measuring accuracy and preservation of value of all
METTLER TOLEDO products for years to come.
Please send for full details about our attractive terms of service.
Thank you.**



* P 1 1 7 8 0 7 7 4 *

Subject to technical changes and to the availability
of the accessories supplied with the instruments.

© Mettler-Toledo AG 2006 11780774 Printed in Switzerland 0611/2.12

Mettler-Toledo AG, Laboratory & Weighing Technologies, CH-8606 Greifensee, Switzerland
Phone +41-44-944 22 11, Fax +41-44-944 30 60, Internet <http://www.mt.com>