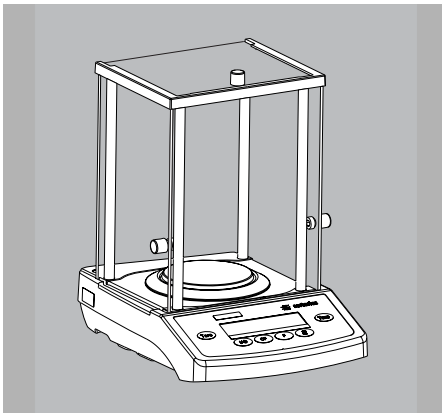
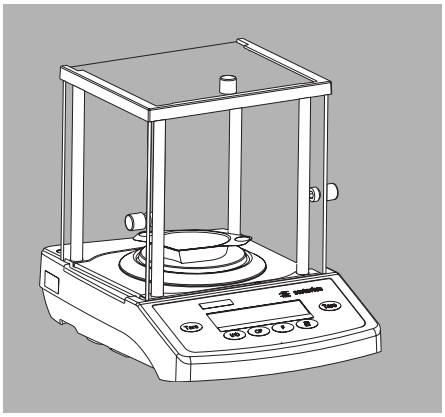
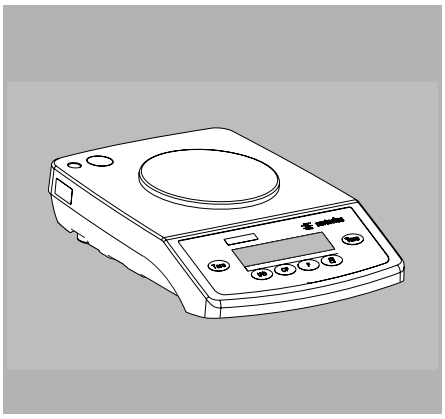
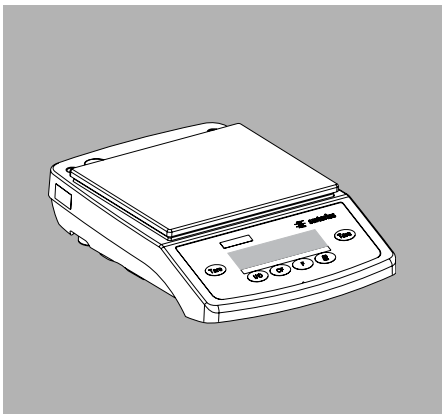
sartorius

Operating Instructions

Sartorius Talent
Sartorius Gem, Gold

Electronic Analytical and Precision
Balances and Precious Metal Scales

Contents

Warnings and Safety Precautions

Safety

● To prevent damage to the equipment, please read these operating instructions carefully before using your balance/scale.

⚠ Do not use this balance/scale in a hazardous area/location.

⚠ Use only commercially available non-rechargeable or rechargeable batteries: 8× AA, Mignon

⚠ Make absolutely sure to unplug the balance/scale from AC power before you connect or disconnect a peripheral device.

⚠ Exposure to excessive electromagnetic disturbance can cause the readout value to change. Once the disturbance has ceased, the instrument can be used again in accordance with its intended use.

Setting up the Balance/Scale

⚠ Warning when using pre-wired RS-232 connecting cables: The pin assignments in RS-232 cables purchased from other manufacturers may be incompatible with Sartorius balances/scales. Be sure to check the pin assignment against the chart on page 20 before connecting the cable, and disconnect any lines that do not match.

– Connect only Sartorius accessories and options, as these are optimally designed for use with your Sartorius balance/scale. Do not try to solve any problems on your own. The operator shall be responsible for any modifications to Sartorius equipment and for any connections of cables or equipment not supplied by Sartorius and must check and, if necessary, correct these modifications and connections. On request, Sartorius will provide information on the minimum operating specifications (in accordance with the standards for defined immunity to interference).
– Do not open the balance/scale housing. If the seal is broken, this will result in forfeiture of all claims under the manufacturer's warranty.

Getting Started

Storage and Shipping Conditions
- Do not expose the balance/scale to extreme temperatures, blows, shocks, vibration or moisture.

Unpacking the Balance/Scale

● After unpacking the balance/scale, check it immediately for any visible damage.

○ If you see any sign of damage, proceed as directed in the chapter entitled “Care and Maintenance,” under the section on “Safety Inspection”.

○ Save the box and all parts of the packaging until you have successfully installed your balance/scale in case you need to return it. Before packing your balance/scale, unplug all connected cables to prevent damage.

Equipment Supplied
- Balance/scale
- Pan support (only on models with a round weighing pan)
- AC adapter, plug type

Additionally supplied with GD503 model:
- Shield ring
- Shield plate
- Dust cover
- Calibration weight

Installation Instructions

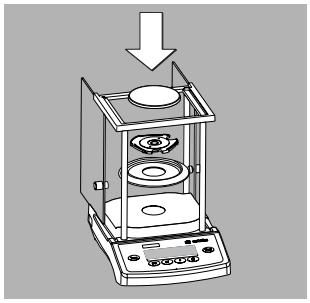
When choosing a location to set up your balance/scale, observe the following:
- Avoid placing the balance/scale in close proximity to a heater or otherwise exposing the balance/scale to heat or direct sunlight
- Protect the balance/scale from drafts that come from open windows or doors
- Avoid exposing the balance/scale to extreme vibrations during weighing
- Do not expose the balance/scale to extreme moisture over long periods

Conditioning the Balance/Scale

Moisture in the air can condense on the surfaces of a cold balance/scale whenever it is brought into a substantially warmer place.
If you transfer the balance/scale to a warmer area, make sure to condition it for about 2 hours at room temperature, leaving it unplugged from AC power.

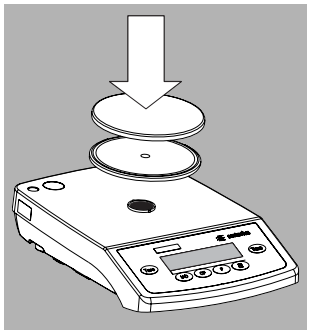
Seal on Balances/Scales of Accuracy Class (II):

Legislation requires that a control seal be affixed to verified balances/scales of accuracy class (II). The control seal consists of a sticker with the “Sartorius” logo. If this seal is damaged or broken, the verification becomes null and void and the balance/scale must be re-verified.



Setting up the Balance/Scale
Balances/Scales with an Analytical Draft Shield

● Place the components listed below inside the chamber in the order given:
– Shield plate
– Shield ring
– Pan support
– Weighing pan

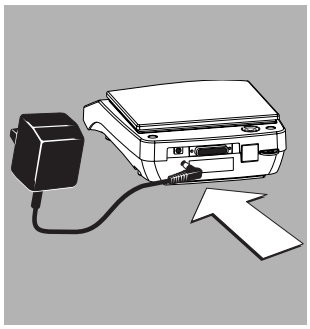


Balances/Scales with a Round Weighing Pan

● Place the components listed below inside the chamber in the order given:
– Pan support
– Weighing pan

Balances/Scales with a Rectangular Weighing Pan

● Place the weighing pan on the balance/scale
● Gem tray (only with GE models)



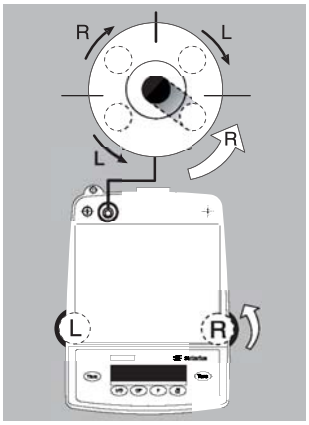
Connecting the Balance/Scale to AC Power/ Safety Precautions
Use only original Sartorius AC adapters:

– 6971947

● Insert the right-angle plug into the jack

● Plug AC adapter into electrical outlet

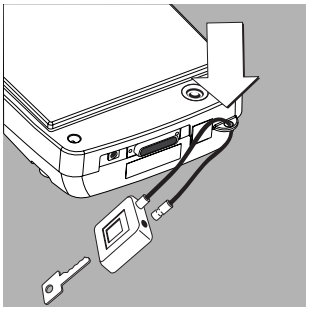
The ground terminal is connected to the balance/scale housing, which can be additionally grounded for operation.



Leveling the Balance/Scale
Level the balance/scale any time you set it up in a new location. Use only the 2 front feet of the balance/scale for leveling.

● Turn the 2 rear feet until they are in position

> In most cases, this will require several adjustment steps



Anti-theft Locking Device
To protect against theft, use the mounting lug on the rear panel of the balance/scale.

● Secure the balance/scale at the place of installation, for example with a chain or a lock

Operation

Basic Weighing Function

Preparation

● Turn on the balance/scale: Press I/⏻

● To change configurations: See the chapter entitled “Configuring the Balance/Scale”

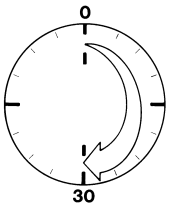
○ To tare the balance/scale: Press →0←

Additional Functions:

● To turn off the balance/scale: Press I/⏻

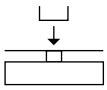
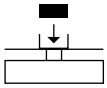
Warmup Time

○ To ensure accurate results, the balance/scale must warm up for at least 24 hours before operation the first time it is connected to power. Only after this time will the balance/scale have reached the required operating temperature.



● Any time the balance/scale has been disconnected from power following the initial installation and warm-up time, it must warm up for at least 30 minutes and then calibrated/adjusted using the weight supplied before further operation.

Example
Basic weighing

Step	Key (or instruction)	Display/Printout
1. Turn on the balance/scale Self-test is performed	I/⏻	0.0000000 kg NET
2. Place container on balance/scale (here: 52 g)		+ 52.0 g
3. Tare the balance/scale	→0←	+ 0.0 g
4. Place sample in container on balance/scale (here: 150.2 g)		+ 150.2 g

Calibration/Adjustment GD503-NTEP

Available Features
Calibration/adjustment can only be performed when

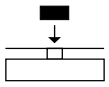
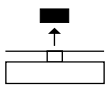
- there is no load on the balance/scale,
- the balance/scale is tared,
- the internal signal is stable.

If these conditions are not met, an error message is displayed. Otherwise, the weight required for external calibration/adjustment is displayed.

Calibration/adjustment of verified balances/scales of accuracy class Ⅱ:
- Calibration/adjustment is blocked (protective cap over menu access switch is sealed)
> Calibration/adjustment is possible only after the seal has been removed. In this case, the verification becomes null and void and the balance/scale must be re-verified.

In order to use the scale in a verified mode, the menu access switch must be returned to the closed position, the protective cap replaced over the menu access switch and the control seal (consisting of the Sartorius logo on a tamper evident sticker) must be affixed over the protective cap.

Example

Step	Key (or instruction)	Display/Printout
1. To unblock calibration/adjustment function, open the cover plate on the bottom of the balance/scale and move the menu access switch to the "open" position		
2. Zero the balance/scale	→0←	0.0 g
3. Begin calibration Calibration weight is displayed without weight unit (here: 1000 g)	→0←>2 sec.	+ 1000.0
4. Place the indicated calibration weight on the balance/scale		1000.0
After calibration, the calibration weight is displayed with wt. unit		+ 1000.0 g
5. Remove the calibration weight		0.0 g

Calibration/adjustment with internal weight: Models GE/TE512-NTEP
Menu setting 1 5 2 required.

Step	Key (or instruction)	Display
1. Calibrate/adjust the unloaded balance/scale		
2. Zero the unloaded balance/scale	→0←	0.0 g
3. Start calibration/adjustment	→0← (press and hold)	C
4. Move the selector for the motorized weight into the "calibration/adjustment" position		C
5. Calibration/adjustment is performed ("CC" flashes on the display)		CC
6. Remove weight: Return the selector to the initial position		CC
7. The internal weight is removed from the weighing system		0.0 g

Access to Audit Trail Information

Purpose
This Procedure explains the method for viewing the calibration counter and parameter counter

Example

Step	Key (or instruction)		Display
1. Press and hold the zero key with audit trail access.	⇨0⇦/A	>2 seconds	C 0001 (display will change P 0000 after 3 seconds)
2. Return to normal weighing mode			**0.00 g**

Application Programs

All application programs can also be used in legal metrology. Calculated weight values are indicated by one of the following symbols displayed to the right of the numerical value:

- Percentage = %
- Piece count = pcs
- Other calculated value = o

The application programs for calibrated balances/scales not intended for use in legal metrology are labeled with a triangle ⚠ in the right side of the display (e.g. averaging).

Toggle between Weight Units

With this application program you can toggle the display of a weight value back and forth between two weight units.

Configure the "Toggle weight units" application in the operating menu:
See "Configuring the Balance/Scale." Menu code: 2.1.2

Menu code		Unit	Conversion factor	Abbr. on printout
1.7.1	3.1.1	Grams (o) on model GD603	1.000	o
1.7.2	3.1.2	Grams	1.000	g
1.7.3	3.1.3	Kilograms[1)]	0.001	kg
1.7.4	3.1.4	Carats	5.000	ct
1.7.13	3.1.13	Milligrams[2)]	1.000.000	mg

o = Factory setting

Function

- To toggle the display between the 1st and 2nd weight units:
  Press the F key

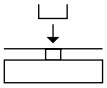
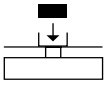
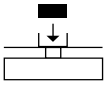
[1)] = only for models with readability ≥ 10 mg
[2)] = only for models with readability ≤ 1 mg

Net-Total
Formulation/Second Tare Memory

Purpose
With this application program you can weigh in components for formulation of a mixture.

Preparation
Configure the Net-Total Formulation/Second Tare Memory application in the operating menu: See "Configuring the Balance/Scale." Menu code: *2. 1.3*

Example

Step	Key (or instruction)	Display/Printout
1. Place an empty container on the balance/scale		+ 65.0 g
2. Zero the balance/scale	→0←	+ 0.0 g
3. Add the first component		+ 120.5 g
4. Store the first component weight. If the print format is set to include data ID codes, the following is printed	F	0.0 g_{NET} N1 + 120.5 g
5. Add the next component		+ 70.5 g
6. Store the 2nd component weight	F	0.0 g_{NET}
7. Add further components, if desired	As described for steps 5 and 6	
8. Display total weight and fill to desired final weight	CF	+ 191.0 g

Counting: The counting functions not legal for trade

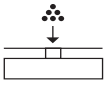
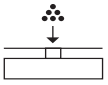
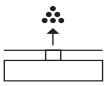
Purpose
With the Counting program you can determine the number of parts that each have approximately equal weight.

Preparation
● Configure the Counting application in the operating menu:
See "Configuring the Balance/Scale."
Menu code: 2. 1. 4

○ Reference sample quantity:
Code 3. 3. 1 5 pcs
Code 3. 3. 2 10 pcs (factory setting)
Code 3. 3. 3 20 pcs
Code 3. 3. 4 50 pcs
Code 3. 3. 5 100 pcs

○ Storage parameter
(display accuracy for counting)
Code 3. 4. 1 Standard resolution (factory setting)
Code 3. 4. 2 With 10 times higher resolution than standard
See also "Configuring the Balance/Scale"

Example
Determine an unknown piece count; weigh the preset reference sample quantity
Menu: Application program: Counting (menu code 2. 1. 4);
Reference sample quantity: 20 pcs (menu code 3. 3. 3)

Step	Key (or instruction)	Display/Printout
1. Zero the balance/scale	→0←	0.0 g
2. Display the reference sample quantity (here: 20 pcs)	F >2 sec.	rEF 20 (briefly)
3. Place the reference sample quantity (20 pcs) on the balance/ scale (here: 66 g)		+ 66.0 g
4. Start the application; if the print format is set to include data ID codes, the following piece weight is printed	F	+ 20 pcs wRef + 3.300 g
5. Weigh uncounted parts (here: 174 pcs)		+ 174 pcs
6. Display weight	F	+ 574.2 g
7. Display quantity	F	+ 174 pcs
8. Unload the balance/scale		0 pcs
9. Delete the reference value	CF	
10. Repeat the procedure starting from step 5, if desired.		

Weighing in Percent

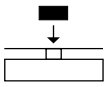
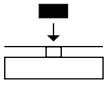
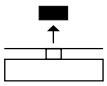
Purpose
This application program allows you to obtain weight readouts in percent which are in proportion to a reference weight.

Preparation
● Configure the Weighing in Percent application in the operating menu:
See "Configuring the Balance/Scale."
Menu code: 2. 1. 5[1)]

○ Reference percentage:
Code 3. 3. 1 5 %
Code 3. 3. 2 10 % (factory setting)
Code 3. 3. 3 20 %
Code 3. 3. 4 50 %
Code 3. 3. 5 100 %

○ Storage parameter
(display accuracy for counting)
Code 3. 4. 1 Standard resolution: With stability (factory setting)
Code 3. 4. 2 With 10 times higher stability than standard
See also "Configuring the Balance/Scale"

Example
Determine an unknown percentage: store the weight on the balance/scale as a reference percentage
Menu: Application program: Weighing in Percent (menu code 2. 1. 5)
Menu: Reference percentage: 100 % (menu code 3. 3. 5)

Step	Key (or instruction)	Display/Printout
1. Zero the balance/scale	→0←	0.0 g
2. Display the reference percentage:	F >2 sec.	rEF 100
3. Place the reference weight for 100 % on the balance/scale (here: 222.5 g)		+ 222.5 g
4. Start the application; if the print format is set to include data ID codes the following is printed	F	+ 100.00 % Wxx% + 222.500 g
5. Place an unknown weight on the balance/scale (here: 322.5 g)		+ 144.94 %
6. Display weight	F	+ 322.5 g
7. Display percentage	F	+ 144.94 %
8. Unload the balance/scale		0.00 %
9. Delete the reference percentage	CF	
10. Repeat the procedure starting from step 5, if desired.		

[1)] Not available in TE...PCE models

Weigh Averaging

Purpose
Use this program to determine weights under unstable ambient conditions. In this program, the balance/scale calculates the weight as the average value from a defined number of individual weighing operations.
These weighing operations are also known as "subweighing operations" or "subweighs."

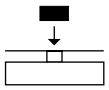
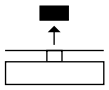
Preparation
● Configure the Weigh Averaging application in the operating menu: See "Configuring the Balance/Scale." Menu code: 2. 1. 12[1)]

○ Number of subweighs for weigh averaging:

3. 3. 1	5 subweighs
3. 3. 2	10 subweighs (factory setting)
3. 3. 3	20 subweighs
3. 3. 4	50 subweighs
3. 3. 5	100 subweighs

See also "Configuring the Balance/Scale"

Example
Determine the weight of a sample in extremely unstable ambient conditions by calculating the average of 10 subweighing operations.
Menu: Application program: Weigh Averaging (menu code 2. 1. 12)

Step	Key (or instruction)	Display/Printout
1. Zero the balance/scale	→0←	0.0 g
2. Display the number of subweighs (here: 10)	F >2 sec.	rEF 10 (briefly)
3. Place sample on the balance/scale (weight readout fluctuates)		8888
4. Start measurement	F	8888 10 9 8 ... 1
After 10 subweighs		+ 275.5 g ⚠
If the print format is set to include data ID codes, the following is printed		Res + 275.5 g
5. Unload the balance/scale		+ 275.5 g ⚠ (stable display)
6. Delete the result	CF	
7. Repeat the procedure starting from step 3, if desired.		

[1)] Not available in TE...PCE models

Configuring the Balance/Scale

Setting the Parameters (Menu Codes)
You can configure your balance/scale to meet individual requirements by selecting from the parameters available in the menu.

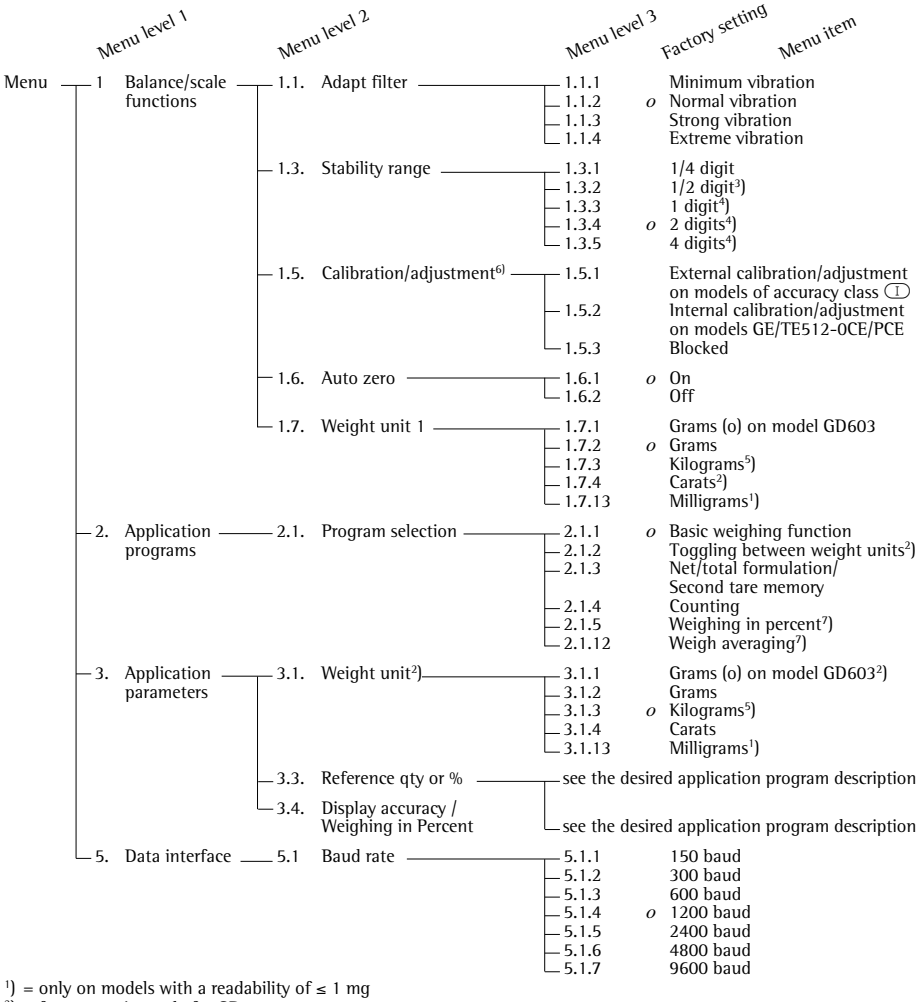
Example: Adapt the balance/scale to unstable ambient conditions
Menu code 1. 1. 4

Step	Key (or instruction)	Display
1. Turn off the balance/scale	I/⏻	
2. Turn the balance/scale back on; while all segments are displayed	I/⏻ →0← briefly	1.
○ To navigate within a menu level; the last menu option is followed by the first option	→0← repeatedly	2. ⋮ 9. 1.
3. Select the 2nd menu level	⊟	1. 1.
4. Select the 3rd menu level	⊟	1. 1. 2 o
5. In Menu Level 3: Select the desired option	→0← repeatedly	1. 1. 4
6. Confirm new setting; the "o" indicates the currently set option	⊟ >2 sec.	1. 1. 4 o
○ Select the next menu level (here: move from the 3rd to the 1st level)	⊟	1.
○ Set other menu codes, if desired	⊟, Tare	
7. Store parameter settings and exit operating menu or	→0← >2 sec.	
○ Exit operating menu without storing changes	I/⏻	
> Restart the application		0.0 g

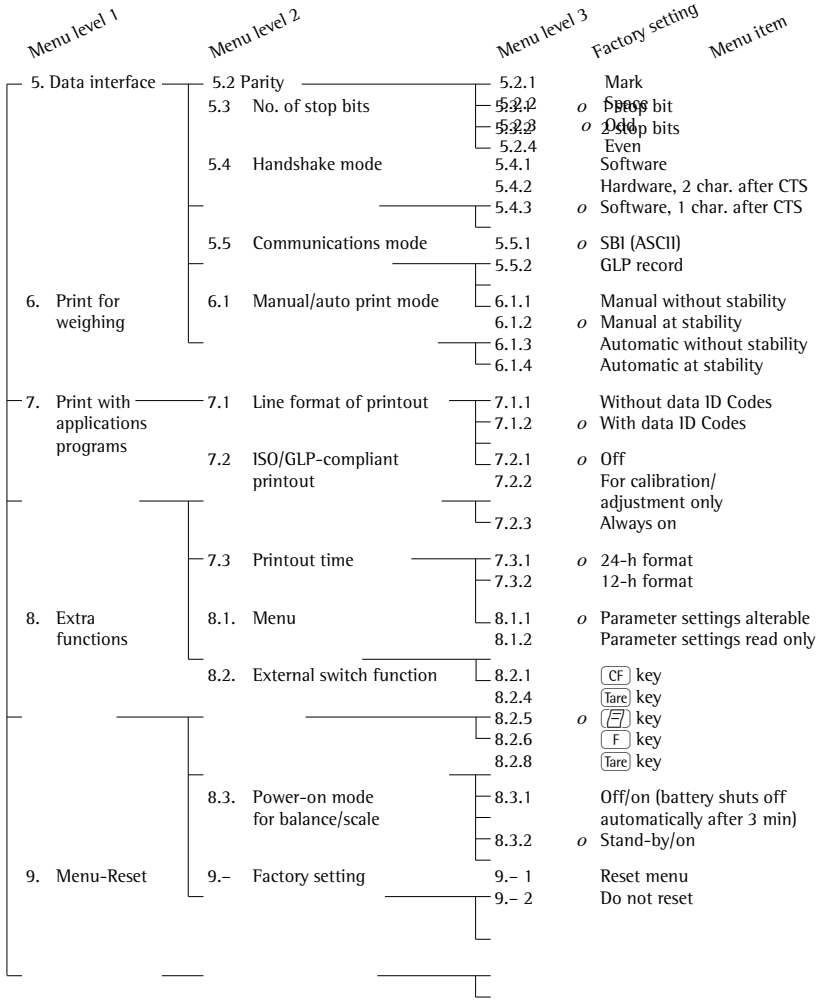
Balance/Scale Operating Menu (Overview)

o Factory setting

| User setting



1) = only on models with a readability of ≤ 1 mg
2) = factory setting only for GD603
3) = factory setting for TE1200-0CE (accuracy class III)
4) = not on model TE1200-0CE
5) = only on models with a readability of ≥ 10 mg
6) = setting can be changed only on models of accuracy class I and GE/TE512-0CE/PCE
7) = Not available in TE...PCE models


Menu level 1
Menu level 2
Menu level 3
Factory setting
Menu item
5. Data interface
5.2 Parity
5.2.1 Mark
5.2.2 Space
5.3 No. of stop bits
5.2.3 1 stop bit
o
5.2.4 2 stop bits
o
5.2.5 Odd
5.2.6 Even
5.4 Handshake mode
5.4.1 Software
5.4.2 Hardware, 2 char. after CTS
5.4.3 o Software, 1 char. after CTS
5.5 Communications mode
5.5.1 o SBI (ASCII)
5.5.2 GLP record
6. Print for weighing
6.1 Manual/auto print mode
6.1.1 Manual without stability
6.1.2 o Manual at stability
6.1.3 Automatic without stability
6.1.4 Automatic at stability
7. Print with applications programs
7.1 Line format of printout
7.1.1 Without data ID Codes
7.1.2 o With data ID Codes
7.2 ISO/GLP-compliant printout
7.2.1 o Off
7.2.2 For calibration/ adjustment only
7.2.3 Always on
7.3 Printout time
7.3.1 o 24-h format
7.3.2 12-h format
8. Extra functions
8.1. Menu
8.1.1 o Parameter settings alterable
8.1.2 Parameter settings read only
8.2. External switch function
8.2.1 CF key
8.2.4 Tare key
8.2.5 o ⌰ key
8.2.6 F key
8.2.8 Tare key
8.3. Power-on mode for balance/scale
8.3.1 Off/on (battery shuts off automatically after 3 min)
8.3.2 o Stand-by/on
9. Menu-Reset
9.– Factory setting
9.– 1 Reset menu
9.– 2 Do not reset

ISO/GLP-compliant Printout

Features
You can have the parameters pertaining to the ambient weighing conditions printed before (GLP header) and after (GLP footer) the values of a weighing series.
These parameters include:

GLP header:
- Date
- Time at beginning of measurement
- Balance/scale manufacturer
- Balance/scale model
- Balance/scale serial number
- Software version number
- Identification number of the current sampling operation

GLP footer:
- Date
- Time at end of measurement
- Field for operator signature

⚠ The record can only be output to a Sartorius data printer YDP03-0CE.

Settings

● Set the following menu codes (see “Configuring the Balance/Scale”):

- GLP-compliant record: menu code 552
- ISO/GLP-compliant record after calibration/adjustment only: menu code 722 or ISO/GLP-compliant record always on: menu code 723
- Line format for printout: With data ID codes – 22 characters: menu code 712
- Printout date/time:
  – 24-h format: menu code 731
  – 12-h format: menu code 732

⚠ No ISO/GLP-compliant record is output if any of the following settings are configured:
menu codes 613, 614 (automatic printout) and 711

Function Keys
Press [⎙] to output header and first measured value.

> Header is output the first time [⎙] is pressed

To output header and reference data automatically with an application program active: Press [F]

End application program:
End application program and output GLP footer: Press [CF]

The ISO/GLP-compliant record can contain the following lines:

`--------------------`	Dotted line
`17-Jan-2004    10:15`	Date/time (beginning of measurement)
`    SARTORIUS AG    `	Balance/scale manufacturer
`Mod.        TE512-0CE`	Balance/scale model
`Ser. no.     10105355`	Balance/scale serial number
`Ver. no.     00-19-41`	Software version
`ID                  `	ID
`--------------------`	Dotted line
`L ID                `	Measurement series no.
`wRef  +   21.140 g  `	Counting: Reference weight
`Qnt   +      235 pcs`	Counting result
`Qnt   +      567 pcs`	Counting result
`--------------------`	Dotted line
`17-Jan-2004    10:20`	Date/time (end of measurement)
`Name:               `	Field for operator signature
`                    `	Blank line
`--------------------`	Dotted line

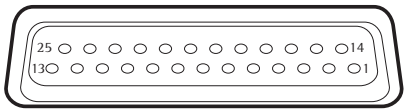
ISO/GLP-compliant printout for external calibration/adjustment

`--------------------`	Dotted line
`17-Jan-2004    10:30`	Date/time (beginning of measurement)
`    SARTORIUS AG    `	Balance/scale manufacturer
`Mod.        TE512-0CE`	Balance/scale model
`Ser. no.     10105355`	Balance/scale serial number
`Ver. no.     00-19-41`	Software version
`ID                  `	ID
`--------------------`	Dotted line
`Cal.       Intern   `	Calibration/adjustment mode
`Set      Complete   `	Confirmation of completed calibration procedure
`--------------------`	Dotted line
`17-Jan-2004    10:32`	Date/time (end of measurement)
`Name:               `	Field for operator signature
`                    `	Blank line
`--------------------`	Dotted line

Data Interface

Purpose
Your balance/scale comes equipped with an interface port for connection to a computer or other peripheral device. You can use an on-line computer to change, start and/or monitor the functions of the balance/scale and the application programs.

Female interface connector



Pin Assignment Chart, 25-pin
female interface connector, RS-232:

Pin 1: Shield
Pin 2: Data output (TxD)
Pin 3: Data input (RxD)
Pin 4: Internal ground (GND)
Pin 5: Clear to Send (CTS)
Pin 6: Not connected
Pin 7: Internal ground (GND)
Pin 8: Internal ground (GND)
Pin 9: Not connected
Pin 10: Not connected
Pin 11: Charging voltage for rechargeable battery pack +12 ... +20 V (I _ out 25mA)
Pin 12: Reset _ Out *)
Pin 13: +5 V output
Pin 14: Internal ground (GND)
Pin 15: Universal remote switch
Pin 16: Not connected
Pin 17: Not connected
Pin 18: Not connected
Pin 19: Not connected
Pin 20: Data Terminal Ready (DTR)
Pin 21: Internal ground (GND)
Pin 22: Not connected
Pin 23: Not connected
Pin 24: Not connected
Pin 25: +5 V output

For remote switch

*) = Hardware restart

Preparation
You can set these parameters for other devices in the Setup menu (see the chapter entitled “Configuring the Balance/Scale”). You will also find a detailed description of the available data interface commands in the file “Data Interface Descriptions for GD, GE and TE Models”, which you can download from the Sartorius website (www.sartorius.com “Download Center”).

The many and versatile properties of these balances/scales can be fully utilized for printing out records of the results when you connect your balance/scale to a Sartorius data printer. The recording capability for printouts makes it easy for you to work in compliance with ISO/GLP.

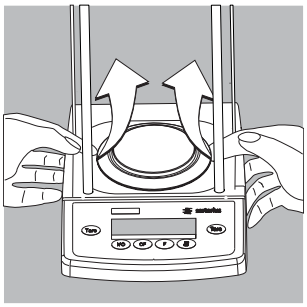
Error Codes

Error codes are shown on the main display for 2 seconds. The program then returns automatically to the previous mode (e.g., weighing).

Display	Cause	Solution
No segments appear on the display	No AC power is available The AC adapter is not plugged in Battery or rechargeable battery pack is discharged	Check the AC power supply Plug in the AC adapter Replace the battery or recharge the battery pack using an external charger
H	The load exceeds the balance/scale capacity	Unload the balance/scale
L	The weighing pan is not in place Something is touching the weighing pan	Place the weighing pan on the balance/scale Move the object that is touching the weighing pan
E 02	Calibration parameter not met, e.g.: – balance/scale not zeroed – balance/scale is loaded	Calibrate only when zero is displayed Press [Tare] to tare the balance/scale Unload the balance/scale
E 05	Selector is in “calibration/adjustment” setting during normal weighing procedure	Return the selector to the basic position
E 06	Built-in motorized calibration weight is defective	Contact your local Sartorius Service Center
E 09	Tare not possible when gross value ≤ zero	Tare the balance/scale
E 10	The [Tare] key is blocked when there is data in the second tare memory (net-total). Only 1 tare function can be used at a time	Press [CF] to clear the tare memory and release the tare key
E 11	Value input is not allowed for second tare memory	Press [Tare]
E 22	Weight is too light or there is no sample on the balance/scale	Increase the weight on the balance/scale
E 30	Interface port for printer output is blocked	Contact your local Sartorius Service Center
Max. weighing capacity is less than indicated under “Specifications”	The balance/scale was turned on without the weighing pan in place	Place the weighing pan on the balance/scale and press [I/⏻] to turn the balance/scale back on
The weight readout is obviously wrong	The balance/scale has not been calibrated/adjusted The balance/scale was not tared before weighing	Calibrate/adjust the balance/scale Tare the balance/scale

If any other errors occur, contact your local Sartorius Service Center!

Care and Maintenance



Service

Regular servicing by a Sartorius technician will extend the service life of your balance/scale and ensure its continued weighing accuracy. Sartorius can offer you service contracts, with your choice of regular maintenance intervals ranging from 1 month to 2 years. The optimum maintenance interval depends on the operating conditions at the place of installation and on the individual tolerance requirements.

Repairs

Repair work must be performed by trained service technicians. Any attempt by untrained persons to perform repairs may lead to hazards for the user.

Cleaning

- Unplug the AC adapter from the wall outlet (mains supply). If you have an interface cable connected to the balance/scale port, unplug it from the port,
- Clean the balance/scale using a piece of cloth which has been wet with a mild detergent (soap)
- After cleaning, wipe down the balance/scale with a soft, dry cloth.

Removing and Cleaning the Weighing Pan:

- Lift up and remove the weighing pan together with the pan support by gripping them from under the shield ring. Make sure that you do not damage the weighing system in doing so.

⚠ Make sure that no liquid enters the balance/scale housing.

⚠ Do not use any aggressive cleaning agents (solvents or similar agents).

Cleaning Stainless Steel Surfaces

Clean all stainless steel parts regularly. Remove the stainless steel weighing pan and thoroughly clean it separately. Use a damp cloth or sponge to clean any stainless steel parts on the balance/scale. Only use commercially available household cleaning agent that is suitable for use on stainless steel. Clean stainless steel surfaces by wiping them down. Then rinse thoroughly, making sure to remove all residues. Afterwards, allow the balance/scale to dry. If desired, you can apply oil to the cleaned surfaces as additional protection. Solvents are permitted for use only on stainless steel parts.

Safety Inspection
If there is any indication that safe operation of the balance/scale with the AC adapter is no longer warranted:

● Turn off the power and disconnect the equipment from AC power immediately

> Lock the equipment in a secure place to ensure that it cannot be used for the time being

In this case, notify your nearest Sartorius Service Center or the International Technical Support Unit based in Goettingen, Germany.
Maintenance and repair work may only be performed by service technicians who are authorized by Sartorius.

Instructions for Recycling

To ensure adequate protection for safe shipment, your balance/scale has been packaged to the extent necessary using environmentally friendly materials. After successful installation of the balance/scale, you should return this packaging for recycling because it is a valuable source of secondary raw material. For information on recycling options, including recycling of old weighing equipment, contact your municipal waste disposal center or local recycling depot.

Overview

Model	TE-512-NTEP GE-512-NTEP	GD-503-NTEP
Type designation		
Accuracy class*	Ⅱ	Ⅱ
Maximum weighing capacity, Max*	510g	100g
Scale interval d*	.01g	.0001g
Verification scale interval e*	.1g	.001g
Tare range (subtractive)	≤100% of maximum weighing capacity	
Operating temperature range	230°C to 35°C (68°F to 95°F)	
Response time (average)	3s	3s
Display update interval (depends on filter level selected)	≤0.5s	
Pan/load plate size	116mm(4.5”)	90mm(3.5”)
Dimensions (W×D×H)	188x270x70 mm	200x270x233 mm
Net weight, approx	1.4 kg	3.0 kg
AC power source/ power requirements	115V+15/-20%	

Accessories (Options)

Product	Order No.
Data printer with date/time, statistics evaluation, transaction counter functions and LCD	**YDP03-0CE**
– Paper (5 rolls)	**6906937**
Remote display* – reflective – for overhead projectors, transmissive	 **YRD02Z** **YRD13Z**
External rechargeable battery pack with external battery charger (hours of operation: 20 or 40, depending on balance/scale model)	**YRB08Z**
RS-232C interface cable for PC connection, 25-pin COM data interface for PC connection, 9-pin	 **7357312** **7357314**
Universal remote control switch: Foot switch with T-connector Hand switch with T-connector	 **YFS01** **YHS02**
T-connector for connecting 2 peripheral devices	**YTC01**
Carrying case – for models with a readability ≥1 mg	 **YDB01TE**

*= not for use in legal metrology

Product	Order No.
In-use dust cover	
– Only over operating elements for models TE214S, TE124S, TE64	**6960TE01**
– for models with a rectangular weighing pan	**6960TE03**
– for models with a round weighing pan	**6960TE02**

Attaching the in-use dust cover to models with a glass draft shield:

- Remove adhesive strip from balance/ scale housing
- Place dust cover on balance/scale
- Stick adhesive strip on dust cover

Weighing bowls/scoops/gem trays	
– 300 ml, weight 86 g, stainless steel	**6407**
– 1000 ml, weight 240 g, stainless steel	**641211**
– 300 ml, weight 22 g, aluminum	**69641304**
– 110 ml, 90 mm ∅, aluminum	**69GP0003**
– 270 ml, weight 62 g, 137 mm ∅, stainless steel	**YWP03G**
– 62 mm ∅, stainless steel	**6910848**
– 85 ml, 70 mm ∅, aluminum	**YWP06G**
– 180 ml, 90 mm ∅, aluminum	**YWP05G**
– 174 mm ∅, stainless steel	**YWP04G**

National Conference on Weights and Measures
15245 Shady Grove Road, Suite 130 • Rockville, MD 20850

Certificate Number: 05-099

National Type Evaluation Program
Certificate of Conformance for Weighing and Measuring Devices

For:
Jeweler's Scale, Non-Computing Scale
Digital Electronic
Models: GD-503, GE-512 and TE-512
Capacities: See Table Below

Accuracy Class: II

Submitted by:
Sartorius
North America Technical Competence Center
6542 Fig Street
Arvada, CO 80004
Tel: (303) 403-4690, ext 123
Fax: (303) 431-4540
Contact: Doug Biette
e-mail: doug.biette@sartorius.com

Standard Features and Options

"The counting feature is not legal for trade" is labeled on front of the scale.

Model	Capacity (g)	d	e	n_{max}
GD-503	100	0.0001	0.001	100 000
GE-512	510	0.01	0.1	5 100
TE-512	510	0.01	0.1	5 100

Automatic zero setting mechanism (AZSM)
Initial zero setting mechanism (IZSM)
Semi-automatic (push-button) zero
Liquid crystal display, 7 segment
Stainless steel weighing surface
RS-232 port
AC/DC adapter

Options:
Remote printer capability
Calibration/adjustment selector (TE 512)
Integrated draft shield enclosure (GD-503)

Temperature Range: 20 °C to 35 °C (68 °F to 95 °F)

This device was evaluated under the National Type Evaluation Program (NTEP) and was found to comply with the applicable technical requirements of Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Don Onwiler
Chairman, NCWM, Inc.

James C. Truex
Chairman, National Type Evaluation Program Committee
Issued Date: October 21, 2005

Note: The National Conference on Weights and Measures does not "approve", "recommend", or "endorse" any proprietary product or material, either as a single item or as a class or group. Results shall not be used in advertising or sales promotion to indicate explicit or implicit endorsement of the product or material by the NCWM.

Certificate Number: 05-099

Sartorius North America Technical Competence Center
Jeweler's Scale, Non-Computing
Models: GD-503, GE-512 and TE-512

Application: General purpose non-computing scale for jewelry and general application.

Identification: The identification badge is located on the left side of the device.

Sealing: To prevent access to the calibration switch a tamper evident seal may be applied over a screw, to the rear of the device. Additionally a tamper evident seal can be applied at the rear of the scale across both halves of the scale housing.

Test Conditions: The Models GD-503 and TE-512 were submitted for evaluation. Emphasis of the evaluation was on device design, operation, performance, and compliance with influence factors. The scales were tested for accuracy over a temperature range of 20 °C to 35 °C (68 °F to 95 °F) and voltage range of 100 VAC to 130 VAC. A load of approximately one-half scale capacity was placed on the scale 100 000 times. The scale was tested periodically over this time.

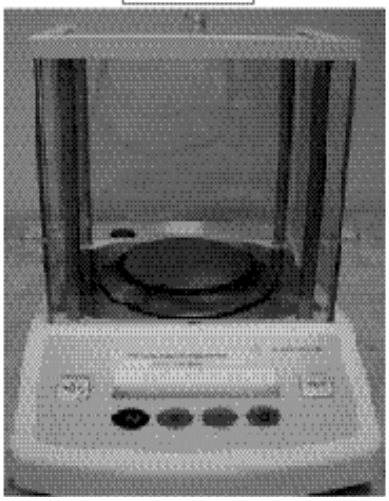
Type Evaluation Criteria Used: NIST Handbook 44, 2005 Edition, NCWM Publication 14, 2005 Edition

Tested By: Sam Boyd (CA)

Conclusion: The results of the evaluations and information provided by the manufacturer indicate the devices comply with applicable requirements.

Information Reviewed By: S. Patoray (NCWM), L. Bernetich (NCWM)

GD-503



TE-512

Sartorius Corporation
131 Heartland Blvd.
Edgewood, NY 11717

Phone 800-645-3108
631-254-4249
Fax: 800-551-3774

Sartorius North America - TCC
6542 Fig Street
Arvada, CO 80004

Phone 800-438-5068
303-403-4690
Fax 303-431-4540

www.sartorius.com

The status of the information,
specifications and illustrations
in this manual is indicated
by the date given below.
Sartorius reserves the
right to make changes to the
technology, features,
specifications and design of the
equipment without notice.

Status:
December 2005, Sartorius TCC,
Arvada, U.S.A

912397.1 Rev. A

Information on EC Verification

Initial Verification
Performance of initial verification by Sartorius AG
is documented on the balance/scale by the following label:

1. Explanation:

CE : EC mark of conformity

Green “M”: Initial verification has already been performed on this instrument

04: Year in which the initial verification was performed, in this case 2004

0111: In Germany, Sartorius AG has been accredited by the Metrology authority of Lower Saxony to perform EC verification, Notified Body of the European Community No. 0111.

2. The security strip is affixed after the initial verification of a weighing instrument of accuracy class (II) and seals it against unauthorized tampering with the metrological data. If the security strip is damaged, the verification is not valid and the weighing instrument is no longer approved for legal metrology.

   Please check the status of the security ID label on your balance/scale.

Using Verified Balances/Scales Approved for Use as Legal Measuring Instruments in the EU*

The balance/scale is not allowed to be used for weighing goods intended for direct sale to the public.

The type-approval certificate for verification applies only to non-automatic weighing instruments; for automatic operation with or without auxiliary measuring devices, you must comply with the regulations of your country applicable to the place of installation of your balance/scale.

○ The temperature range indicated on the verification ID label (°C) must not be exceeded during operation.

Any time the balance/scale is re-calibrated and/or re-adjusted following repairs, after the verification seal has been broken, after changing the setting of the menu access switch, etc., you must observe the applicable national laws and regulations governing the use of weighing instruments in legal metrology in your country.