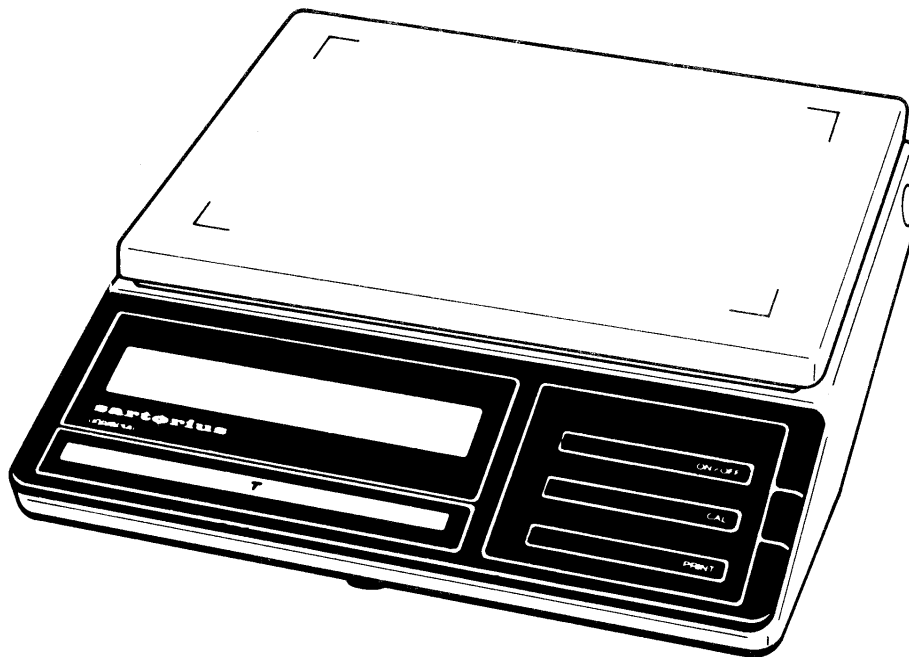
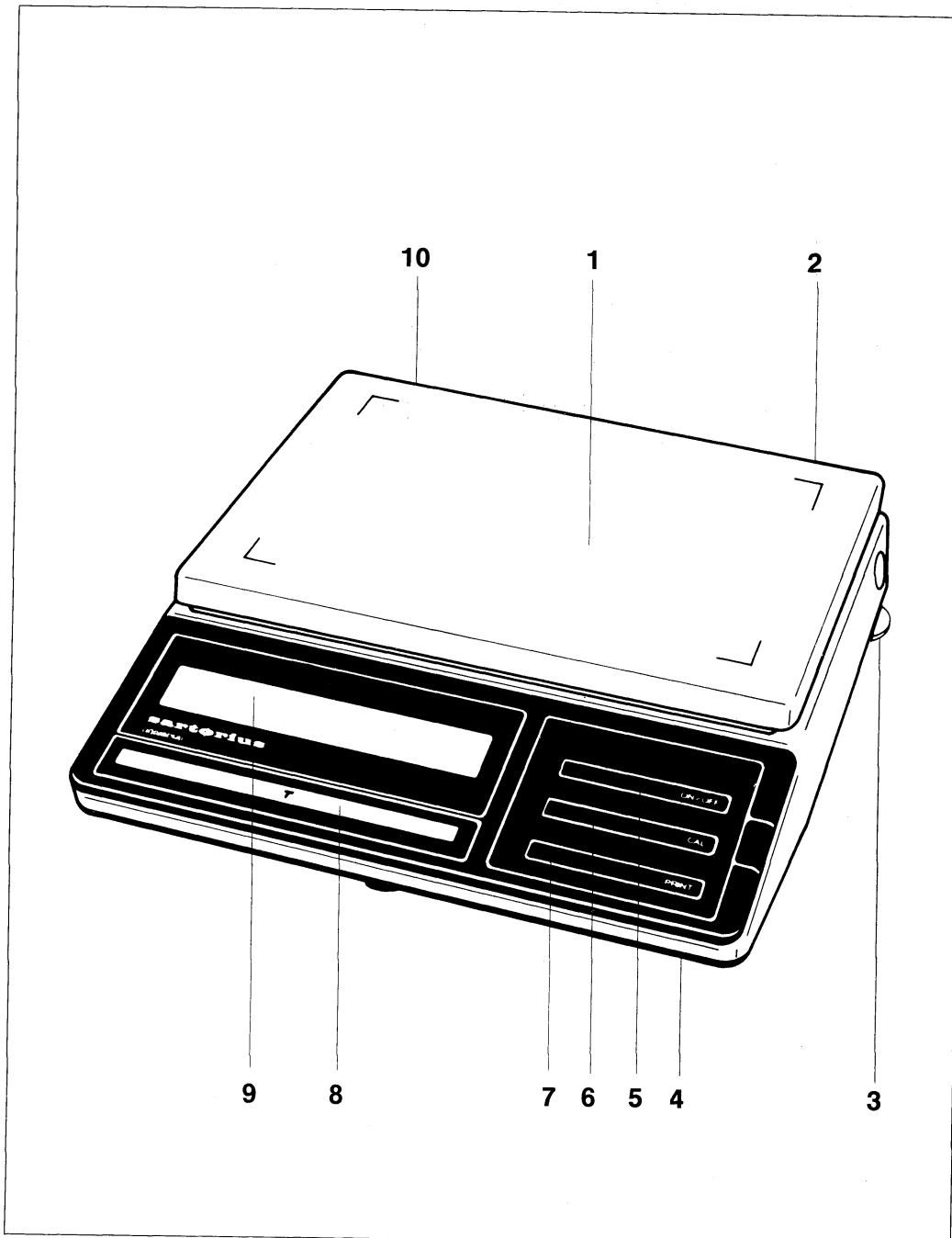

**Sartorius Universal.
U 4100, U 4100 S,
U 4800 P, U 6100,
U 5000 D, U 6100 D,
U 6100 S.**



Electronic Precision Balances

sartorius



- 1 Pan
- 2 Power receptacle for line cord (power lead)
- 3 Leveling foot
(U 4100, U 6100, U 6100 D only)
- 4 Menu access switch (for balance operating program)
- 5 ON/OFF-Taste
- 6 CAL key
- 7 PRINT key (functions only if balance has a built-in interface)
- 8 Tare control
- 9 Weight display
- 10 Level indicator
(not by U 4100, U 6100, U 6100 D)

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Sartorius Universal U 4100, U 4100 S, U 4800 P, U 6100, U 6100D, U 6100S.

With this Sartorius Balance you have acquired a sophisticated, top-of-the-line electronic weighing Instrument which will help lighten your daily work load.

Please read these installation and operating instructions carefully before operating your new balance.

Pursuant to the German Directive for the Implementation of Regulations for Prevention of Accidents "Elektrische Anlagen und Betriebsmittel (VBG 4)" [Electrical Installations and Equipment] of April 1986, it is hereby certified that the equipment delivered, "electronic precision balance, model U 4100, U 4100 S, U 4800 P, U 6100, U 6100 D or U 6100 S," is manufactured and tested in compliance with the following DIN/VDE regulations

DIN IEC 348/VDE 0411:
Safety requirements for electronic measuring apparatus

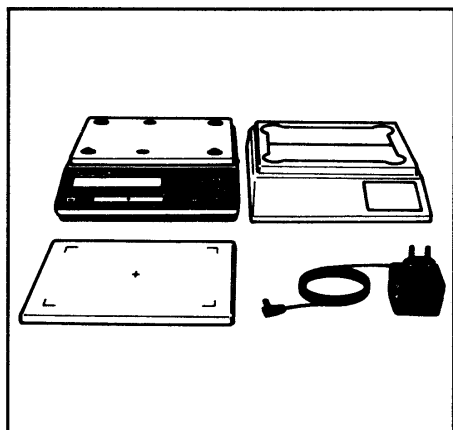
DIN IEC 380/VDE 0806:
Safety of electrical y energized Office machines

DIN IEC 601 /VDE 0750:
Safety of medical electrical equipment

When you use electrical equipment in installations and under ambient conditions requiring higher safety standards you must comply with the provisions as specified in the applicable regulations for installation in your country.

Equipment Supplied.

Do not miss out on the benefits of our warranty. Please fill out the warranty card, indicating the date of installation, and return the card to your Sartorius dealer.



The equipment supplied comprises the components shown on the left.

Save the packaging material and the box for shipping your balance to prevent any damage caused during transportation.

Installation Instructions.

Choose a suitable place to set up your balance. It should not be exposed to the following:

- heat radiation
- aggressive/corrosive substances
- vibrations
- drafts.

Your Sartorius Balance will provide accurate readouts even when it is exposed to unfavorable conditions. You can adapt it to your requirements simply by changing the menu code settings of the balance operating program. For this purpose, please read pages 10 through 12.

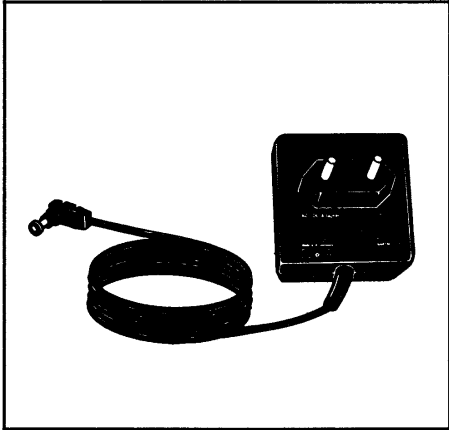
After you plug your balance into a wall outlet, allow for at least 30 minutes warmup.

Important Note

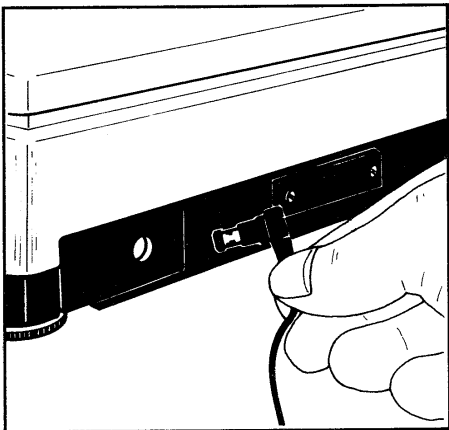
Unplug the AC adapter before you connect or disconnect peripherals.

Startup.

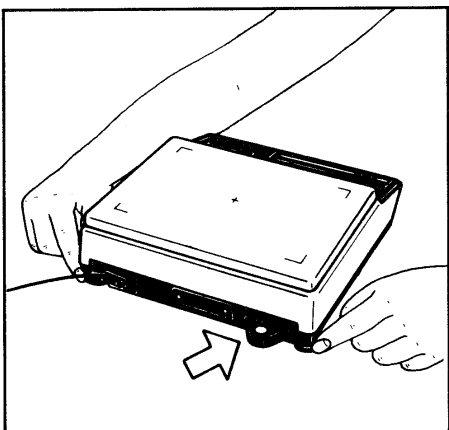
Attach the dust cover by pressing down on the adhesive disks, and install the pan (1) on the balance.



Your balance is powered by an AC adapter. Please make sure that the voltage printed on this unit is identical to your local line voltage rating.



Plug the line cord into the power receptacle of the balance and plug the AC adapter into a wall outlet.



Level the balance using the leveling feet (3) such that air bubble is centered within the circle on the level indicator (10) (not by U 4100, U 6100 und U 6100 D).

Operation.

The weight display shows the following special Status messages for your Information:

BUSY

The processor is still busy processing a function and will not accept any other commands to perform functions at this time.

STANDBY

The balance has been turned off with the ON/OFF key (5) and is now in the STANDBY mode and ready to operate without warmup.

POWER OFF

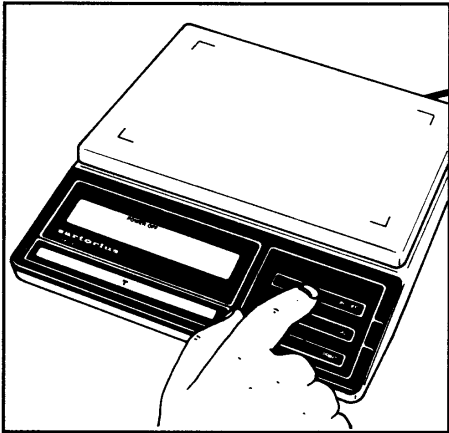
The balance was disconnected from line power (reconnection to line power, power failure).

CAL

The calibration function has been called.

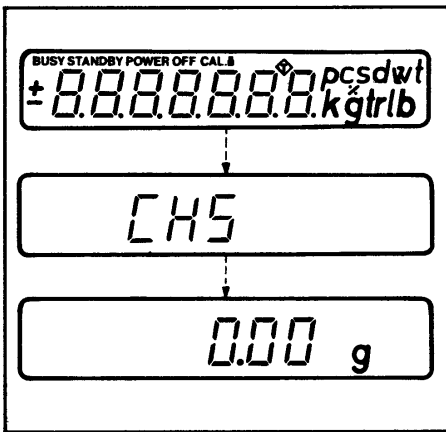
In addition to grams, this balance gives you a variety of other international weight unit options to work with.

Select the weight unit you need from the table of the menu options for the balance operating program, and set the appropriate code(s) as described in the section "Balance Operating Program."



Press the ON/OFF key (5) to switch the balance on or off. You can also turn on the balance with the tare control (8).

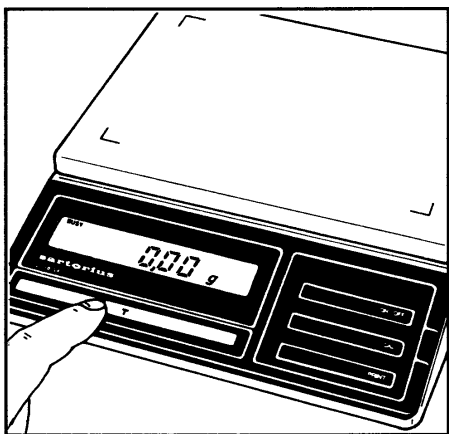
After the adapter has been plugged into a wall outlet, the weight display will go out when ever you turn off the balance. All other electronic circuits will remain energized (STANDBY state). This means the balance is immediately ready to operate without requiring warmup the next time you switch it on.



After the power is turned on, a test of all essential electronic functions is run automatically.

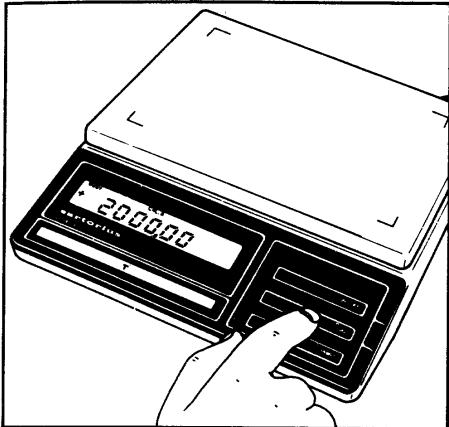
The self-test ends with the readout 0.00 g/O.O g (if the program code setting 51 1 is used).

Now place your sample on the pan (1) to determine the weight. Read off the weight in the display (9) as soon as the weight unit (in this case "g") appears as the stability symbol.



If you wish to use a Container or if the weight display does not indicate 0.00 g/O.O g (or the equivalent with the weight unit of your choice), press the tare control to zero the display.

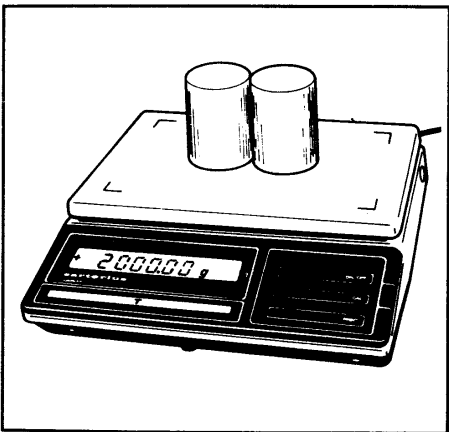
Calibration.



External Calibration:

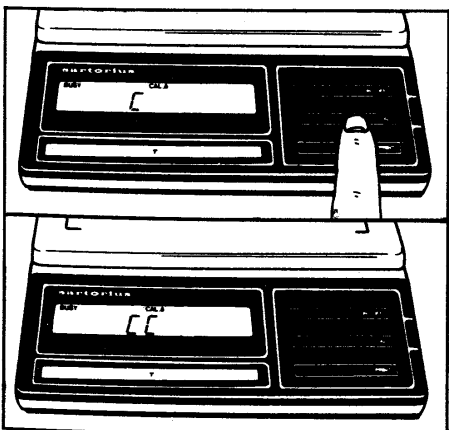
- Only possible with an accurate calibration weight (U 4100, U 4100 Sand U 4800 P-2,000 g; U 5000 D, U 6100, U 6100 D and U 6100.S -5,000 g) Please refer to the "Accessories."

Clear the pan and press the CAL key (6) (for the U 6100 S use the tare control (8)) for at least three seconds until the calibration weight readout appears in the display.



Center the calibration weights on the pan.

Now the weight unit symbol is displayed. An acoustic Signal indicates the end of the calibration procedure.



Internal Calibration: (only for the U6100S)

Unload the balance and zero the display. Press the CAL key (6) as soon as the display shows a zero readout. "C" will now be displayed. If "CE" is displayed instead, zero the display by pressing the tare control and press the CAL key again.

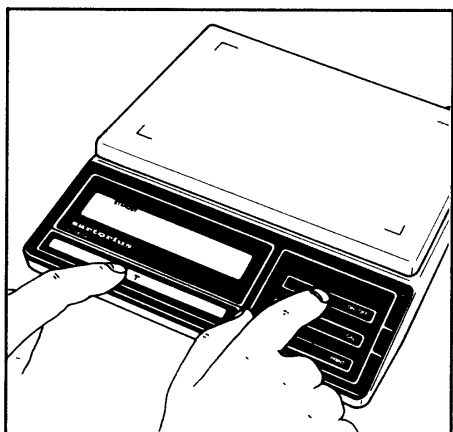
After a few seconds, "CC" will be displayed followed by 0.00 g. An acoustic Signal indicates the end of the calibration procedure.

You can block access to both the internal and external calibration functions-to find these menu codes, refer to the "Balance Operating Program." These functions are accessible when ever the balance operating program is unlocked by the menu access switch (4).

Balance Operating Program.

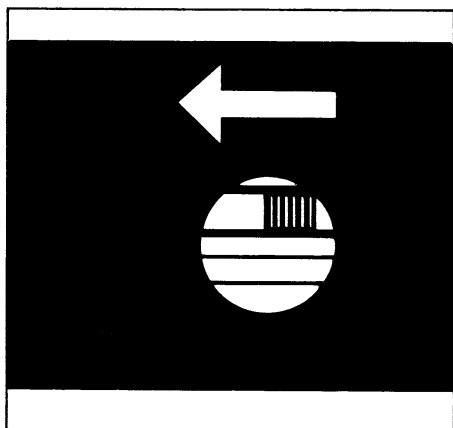
The balance operating program lets you adapt your balance to various ambient conditions and to different weighing requirements and select the weight unit(s) commonly used in your country. At the factory we have set the codes for a Standard program, which is protected by a locking function to prevent accidental changes.

The **"code"** contains the information of the operating program, It consists of three digits: one each for the page the line and the word.



How to access the menu of the balance operating program:

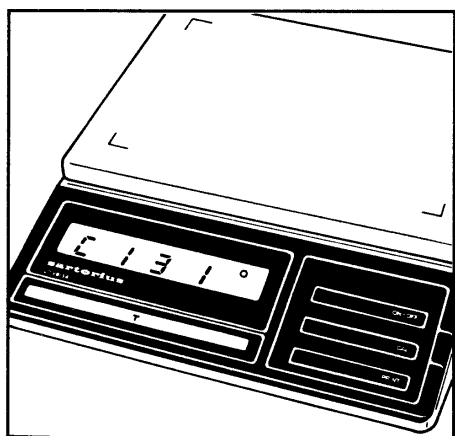
With the balance turned off (STANDBY state), hold down the tare control (8) and simultaneously press the ON/OFF key (5). Upon completion of the automatic self-test, release the tare control as soon as "CH 5" is displayed. The Status of the balance operating program will be indicated in the weight display: "L" Stands for the list mode. In this mode you can check the menu code settings, but you cannot program new menu codes. If you wish to change a program menu code, you must first unlock the menu access switch to access the menu.



To do so slide the menu access switch (4), located at the front right of your balance, in the direction of the arrow.

The display will indicate **"C"**, which Stands for the change mode, meaning you can now proceed to make the necessary code changes.

After the balance operating program has been called the display will show a continuous numerical sequence from 0 to 5 representing the "page" selection, in addition to the Status code letter "L" or "C." When the code number of your choice for the "page" appears, press the tare control. The "page" code number now stops in the display, and a series of numbers for the "lines" will begin to cycle. Again, press the tare control to stop the code number of your choice in the display. Next the numbers for the "word" will cycle in the display. Repeat the procedure to enter the last digit of the code.



The "o" symbol that appears indicates the actual setting.

To change any settings ("C" mode), press the tare control as soon as the appropriate code appears.

Brief display of BUSY and the "o" symbol confirms your selection, followed by a return to "zero" representing the "line."

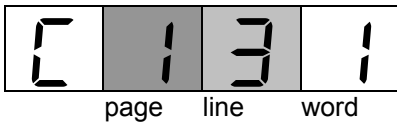
To return to the weighing program:

press the tare control each time a 0 appears in the numerical sequence (word, line, page). If you have made code changes your code entry will be stored as soon as the display returns to the weighing mode. Lock the balance operating program using the menu access switch (display "L") and replace the protective cap.

Auto Zero

This balance has an automatic zero tracking function, known as "Auto Zero" (can be turned off by menu code).

Any changes off zero ≤ 0.5 of a digit per second will be set to zero automatically.



Menu of the Balance Operating Program
(Active Parameters)

Code	Parameter	Factory setting	Code	Parameter	Factory setting	
[1 1 1]	Ambient Conditions Very stable (U 4100, U 6100)	■	[1 7 1]	Internal Calibration (U 6100 S only) Accessible	■	
[1 1 2]		■	[1 7 2]		Access blocked	
[1 1 3]		Unstable				
[1 1 4]		Very unstable				
[1 2 1]	Stability Range 0,25 digit		[4 1 1]	Special Information Program Lock OFF		
[1 2 2]		0,5 digit	[4 1 2]		ON	■
[1 2 3]		1 digit				
[1 2 4]		2 digits		[4 3 1]	Acoustic Signal ON	■
[1 2 5]		4 digits	■	[4 3 2]		OFF
[1 2 6]		8 digits				
[1 2 7]		16 digits				
[1 2 8]		32 digits				
[1 2 9]		64 digits				
[1 3 1]	Display Format Last decimal ON	■		Weight Units¹⁾ Code [5 1 1] Grams g	■	
[1 3 2]		Last decimal OFF			[5 1 2] Kilograms kg	
[1 3 3]		Last decimal at stability			[5 1 3] Carats ct	
[1 3 4]		All decimals at stability			[5 1 4] Pounds lb	
[1 4 1]	Tare Parameter Without stability		[5 1 5] Ounces oz			
[1 4 2]		At stability	■		[5 1 6] Troy ounces ozt	
[1 5 1]	Auto Zero ON	■	[5 1 7] Parts/pound o			
[1 5 2]		OFF			[5 2 1] Hong Kong taels tl	
[1 6 2 1]	External Calibration Accessible	■	[5 2 2] Singapur taels tl			
[1 6 2]		Access blocked			[5 2 3] Taiwan taels tl	
			[5 2 4] Grains gr			
			[5 2 5] Pennyweights dwt			
			[5 2 6] Mommies o			
			[5 2 7] Milligrams o			
			[5 2 8] Karats o			
			[5 2 0] Call program line			
			[5 0] Call program page			
			[0] End of programming			

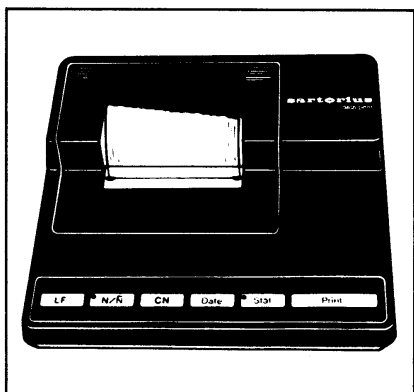
Additional Parameters for the data Output format at the interface port and for calculation programs are available on request.-Please refer to the "Accessories."

¹⁾ You can choose any weight unit as long as it can be displayed in the particular weighing range you selected (for example do not set the code for "kg" when you are using a 0.1 mg balance).

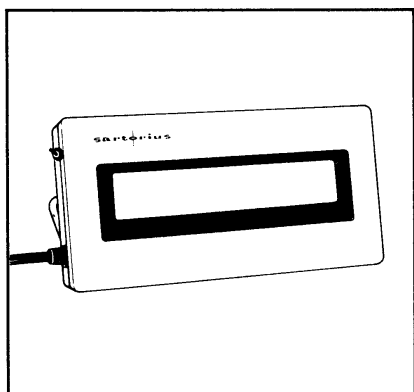
Troubleshooting Guide.

Problem ...	Causes ...	Remedy
No segments appear in the weight display (9)	<ul style="list-style-type: none"> - No voltage available - The AC adapter has not been plugged in 	<ul style="list-style-type: none"> - Check current supply - Plug in AC adapter
Weight display shows “L” or “CH 2”	<ul style="list-style-type: none"> - The pan (1) is not in place 	<ul style="list-style-type: none"> - Position the pan
Weight display shows “H”	<ul style="list-style-type: none"> - Load exceeds capacity of the balance 	<ul style="list-style-type: none"> - Unload the balance
The weight readout changes constantly or the special message “BUSY” does not go out in the weight display	<ul style="list-style-type: none"> - Unstable ambient conditions - Too much vibration or the balance is exposed to a draft - Sample does not have a stable weight 	<ul style="list-style-type: none"> - Set up balance in another area - Access the menu to adjust the proper code for the particular type of weighing environment
Weight shows “CE”	<ul style="list-style-type: none"> - The Cal key (6) was not pressed when the display read zero - The balance is loaded 	<ul style="list-style-type: none"> - Press the tare control (8) - Unload the balance
The code “CC” does not go out in the display	<ul style="list-style-type: none"> - The balance is not ready to calibrate or is in the warmup phase - The weighing system is affected by drafts or vibration 	<ul style="list-style-type: none"> - After plugging the AC adapter into a wall outlet, allow for at least 30 minutes’ warmup - Set the appropriate code by accessing the menu of the operating program
The weight readout is obviously wrong	<ul style="list-style-type: none"> - The balance has not been calibrated - The balance has not been tared before weighing - The air bubble of the level indicator is not within the circle (not by U 4100,U 6100 and U 6100 D) 	<ul style="list-style-type: none"> - Calibrate the balance - Tare before weighing - Level the balance

Accessories (Optional).



Data printer with date/time and statistics functions	YDP 02-0D
print speed, approx. lines/sec.	1,5
Printer housing (W x D x H) in mm	150 x 138 x 43



Remote display	
- LCD, reflective	7371 01 A
- for overhead projectors	7371 02 A

Calibration weights for: U 4100, U 4100 S, U 4800 P (2 x 1000 g)	7072 08
U 5000 D, U 6100, U 6100 D (1 x 5000 g)	7072 13

Interface	YDO 01 U
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"PLUS" Performance Package, integratable (incl. interface)	YDI 01 U+
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- Over/under checkweighing/sorting & classification
- Mass unit conversion – Weight of residue in %/ change in %
- Statistics – Net total/formulation & compounding
- Filling toward "0" – Parts counting
- Animal weighing
- Calculations by a factor
- Calculation of the weight per unit area/division
- Accumulator memory – I.D. no memory
- Communication with computers

External rechargeable battery pack: hours of operation: approx. 10 (detailed information on additional options for powering the balance is availed in hour Service Information bulletin, no. 15/88)	YRB 01 Z
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Carrying case	YDB 02 L
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Antitheft locking device	6087
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Dust cover	69 60U360
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Specifications.

Model		U 4100	U 4100 S	U 4800 P
Capacity	g	4140	4140	800/1600/ 3000/4840
Readability	g	0,1	0,01	0,01/0,02/ 0,05/0,1
Tare range (by subtraction))	g	4140	4140	4840
Standard deviation	g	≤±0,05	≤±0,01	≤±0,01/0,01/ 0,02/0,03
Max. linearity	g	≤±0,1	≤±0,02	≤±0,02/0,02/ 0,03/0,05
Stabilization time (typical)	s	2		
Display update	s	0,1 – 0,8 (selectable)		
Adaptation to ambient conditions and application requirements		by selection of 4 optimized filter levels		
Stability range	d	0,25 ... 64 (selectable)		
Ambient temperature range	K	273-313 (0° C ... +40°C)		
Sensitivity drift within 283 ... 303 K	/K	≤±5·10 ⁻⁶ /K	≤±2·10 ⁻⁶ /K	≤±3·10 ⁻⁶ /K
Pan size (W x D)	mm	235 x 180		
Housing dimensions (W x D x H)	mm	250 x 270 x 65		
Net weight	kg	5		
Line voltage (mains; frequency 50 – 60 Hz)		115 V or 230 V, depending on the AC adapter used		
Allowable voltage fluctuation		-20 % ... + 15 %		
Power consumption	VA	max 7,5 (typical)		
Interface (optional)		RS 232 C/V24 – 28, RS 423/V10; 7-bit; parity: even, mark, odd, space; transmission rates 150 ... 9600 Baud		

Specifications.

Model		U 5000 D	U 6100	U 6100 D	U 6100 S
Capacity	g	500/5050	6100	600/6100	6100
Readability	g	0,01/0,1	0,1	0,01/0,1	0,01
Tare range (by subtraction))	g	5050	6100	6100	6100
Standard deviation	g	$\leq\pm 0,01/0,05$	$\leq\pm 0,05$	$\leq\pm 0,01/0,05$	$\leq\pm 0,01$
Max. linearity	g	$\leq\pm 0,01/0,1$	$\leq\pm 0,1$	$\leq\pm 0,02/0,1$	$\leq\pm 0,02$
Stabilization time (typical)	s	2			
Display update	s	0,1 – 0,8 (selectable)			
Adaptation to ambient conditions and application requirements		by selection of 4 optimized filter levels			
Stability range	d	0,25 ... 64 (selectable)			
Ambient temperature range	K	273-313 (0° C ... +40°C)			
Sensitivity drift within 283 ... 303 K	/K	$\leq\pm 5 \cdot 10^{-6}/K$	$\leq\pm 5 \cdot 10^{-6}/K$	$\leq\pm 5 \cdot 10^{-6}/K$	$\leq\pm 2 \cdot 10^{-6}/K$
Pan size (W x D)	mm	235 x 180			
Housing dimensions (W x D x H)	mm	250 x 270 x 65			
Net weight	kg	5	5	5	6
Line voltage (mains; frequency 50 – 60 Hz)		115 V or 230 V, depending on the AC adapter used			
Allowable voltage fluctuation		-20 % ... + 15 %			
Power consumption	VA	max 7,5 (typical)			
Interface (option)		RS 232 C/V24 – 28, RS 423/V10; 7-bit; parity: even, mark, odd, space; transmission rates 150 ... 9600 Baud			

Sartorius AG

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