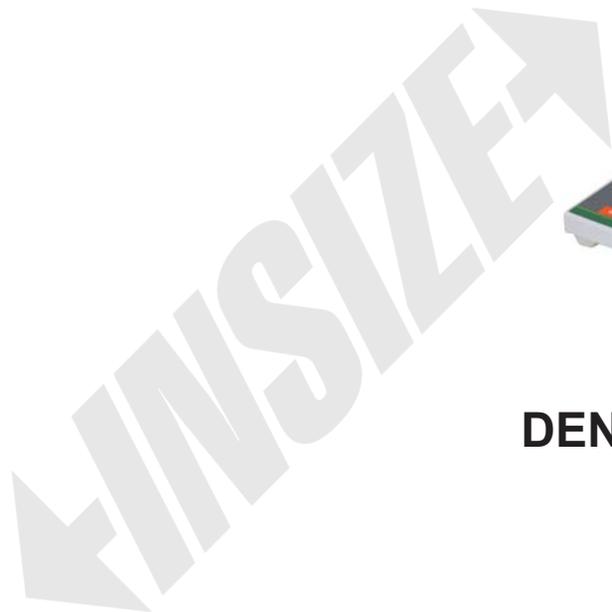




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8103 DENSITY ELECTRONIC BALANCE

Instruction Manual

PLEASE SCAN QR CODE TO
WATCH THE OPERATION
VIDEO OF PRODUCTS.



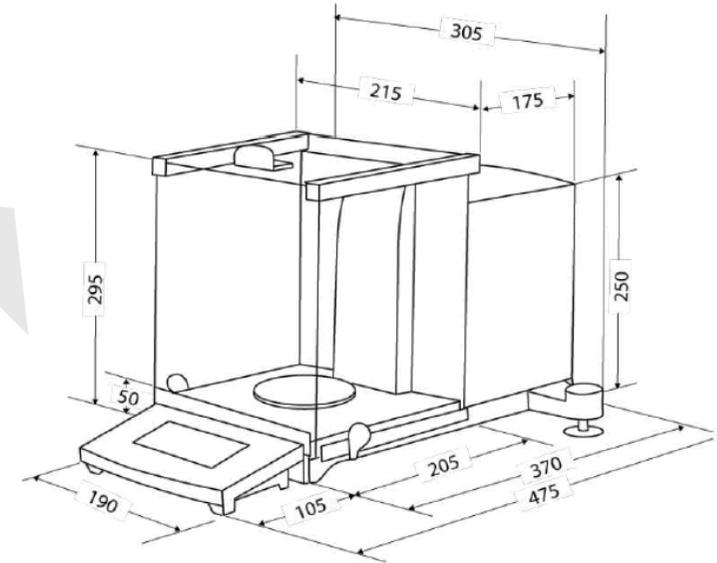
1. Technical parameters

SPECIFICATION

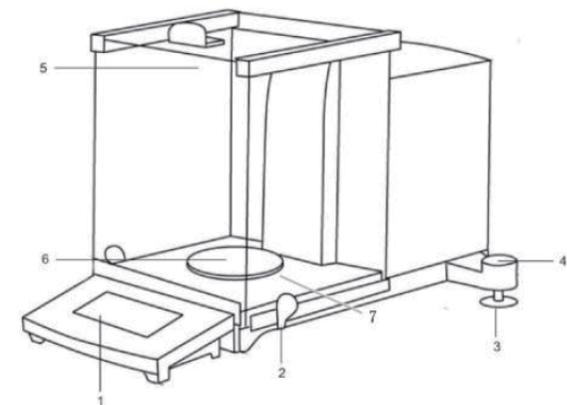
Code	8103-120	8103-210
Maximum weighing	120g	210g
Minimum weighing	10mg	10mg
Resolution (d)	0.1mg	0.1mg
Verification interval (e)	1mg	1mg
Accuracy (m is load)	m≤50g: ±0.5mg m>50g: ±1mg	m≤50g: ±0.5mg 50g<m≤200g: ±1mg m>200g: ±1.5mg
Sample weight	>10g	
Weighing pan size (Ød)	Ø90mm	
Repeatability	±0.1mg	
Linearity	±0.2mg	
Stabilization time	2.5s	
Operation temperature	13~25°C	
Operation humidity	40~80% RH	
Output	RS232	
Power supply	power adapter (12V/2A)	
Dimension (L×W×H)	480×310×320mm	

- Density readability: 0.0001g/cm³
- Warm-up time: 30-60 minutes
- Product weight: 6kg

2. Dimension Schematic

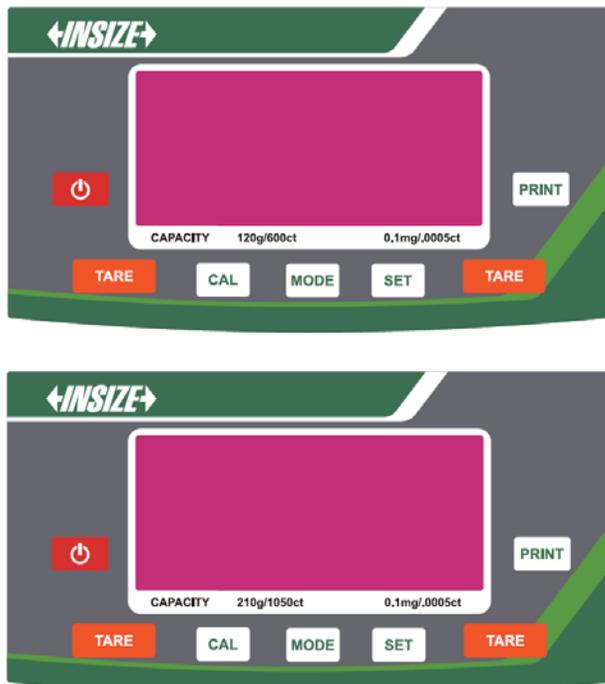


3. Equipment overview



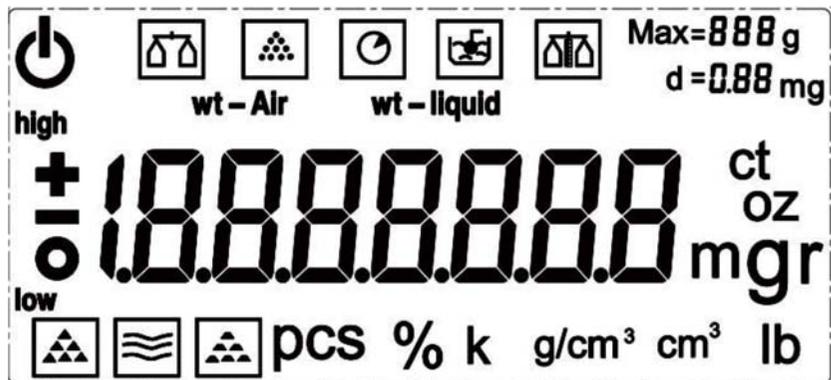
- 1 Display
- 2 Handle for operating the side windshield
- 3 Adjustable feet
- 4 Bubble level
- 5 Windshield
- 6 Weighing pan
- 7 Windshield assembly

4. Key Diagram



Key	Function
	<ul style="list-style-type: none"> ■ Power on/off ■ Exit menu
	<ul style="list-style-type: none"> ■ Calibration
	<ul style="list-style-type: none"> ■ Peeling ■ Zeroing ■ Save settings
	<ul style="list-style-type: none"> ■ Changing weighing units ■ Selecting an application
	<ul style="list-style-type: none"> ■ Determine how to save reference values ■ Turning on/off the background illumination of the display (Press this key twice consecutively)
	<ul style="list-style-type: none"> ■ Changing menu settings ■ Printing the displayed values

5. Display information



Demonstrate	Descriptive
	<ul style="list-style-type: none"> ■ Stable value display
	<ul style="list-style-type: none"> ■ Balance in standby mode
g	<ul style="list-style-type: none"> ■ Reading unit "grams"
ct	<ul style="list-style-type: none"> ■ Reading unit "carat"

显示	描述
lb	<ul style="list-style-type: none"> ■ Reads in "pounds".
oz	<ul style="list-style-type: none"> ■ Reads in "ounces".
pcs	<ul style="list-style-type: none"> ■ Counting and weighing status
g/cm³	<ul style="list-style-type: none"> ■ Density units
	<ul style="list-style-type: none"> ■ Normal weighing mode
	<ul style="list-style-type: none"> ■ Counting weighing mode
	<ul style="list-style-type: none"> ■ Percentage weighing mode
	<ul style="list-style-type: none"> ■ Density measurement mode

显示	描述
	<ul style="list-style-type: none"> ■ Checkweighing mode
k	<ul style="list-style-type: none"> ■ Gold k-value
Max=888 g	<ul style="list-style-type: none"> ■ Maximum range of balance
d = 0.88 mg	<ul style="list-style-type: none"> ■ Minimum readable number
wt – Air	<ul style="list-style-type: none"> ■ Sample weight in air (density measurement mode)
wt – liquid	<ul style="list-style-type: none"> ■ Weight of sample in liquid (density measurement mode)
+	<ul style="list-style-type: none"> ■ Positive weighing values
–	<ul style="list-style-type: none"> ■ Negative weighing values

显示	描述
high	<ul style="list-style-type: none"> ■ Checkweighing mode - overweight
low	<ul style="list-style-type: none"> ■ Checkweighing mode - underload
	<ul style="list-style-type: none"> ■ Solid density measurement mode
	<ul style="list-style-type: none"> ■ Liquid density measurement mode
	<ul style="list-style-type: none"> ■ Gold density measurement mode

6. Basic Information

■ Purpose

You have purchased this balance to determine the weighing value of the object to be weighed. Use the balance in the same way as a "non-automatic balance", i.e., by manually and carefully placing the object to be weighed in the center of the pan. When a stable value is obtained on the display, the weighing value can be read.

■ Improper Operation

▲ Do not operate the balance in a dynamic additional weighing procedure when removing or adding small amounts of items to be weighed. The "Stability Compensation" program installed in the balance may cause an incorrect weighing value to be displayed! (e.g. liquid slowly draining from a container on the balance).

▲ Do not exceed the maximum weighing capacity of the balance when weighing, as this may damage the weighing system.

▲ It is strictly prohibited to shock or overload the balance beyond the maximum load (maximum weighing capacity) specified for the balance, or to subtract a tare load that may be present, as the balance is likely to be damaged as a result.

▲ Do not operate the balance in an explosive atmosphere, this version does not have explosion-proof safety settings.

▲ Do not modify the balance structure, this may lead to inaccurate weighing results, or produce safety-related errors or destroy the balance.

■ Warranty

The following cases are not covered by our warranty.

▲ Not using the product in accordance with the instructions provided by the Company.

▲ Damage caused by unauthorized service

▲ The equipment has been modified or disassembled

▲ Mechanical damage or damage caused by other media, liquids or natural wear and tear

▲ Improper installation of the equipment or incorrect power connection

▲ Overloading of the weighing system

■ Testing of ancillary accessories

If feasible, the properties and weighing weights associated with the weighing of this balance must be tested periodically within the framework of quality assurance, with the responsible user defining the appropriate intervals, type and scope of this testing.

7. Security prevention

■ Attention to the instructions in the operation manual

Even if you are already familiar with our 8310 series electronic analytical balance, please read this manual carefully before installation and commissioning.

■ Personnel Training

This equipment should only be operated and maintained by trained personnel.

8. Transportation and preservation

■ verify and accept (a delivery)

When you receive this unit, please check the packaging immediately and inspect the unit after unpacking for any visible damage.

■ Packaging/Return shipping

▲ Please retain all parts of the original packaging in case of a possible return.

▲ Return items in their original packaging only.

▲ Disconnect all cables and remove parts before shipping.

▲ Pack display units, scales, accessories, and power supplies separately.

▲ Ensure that the glass windshield does not slide (e.g., use tape).

▲ Reinstall any transportation fixtures that may be provided.

▲ Ensure that all parts are not deformed or damaged as described.

9. Installation and commission

■ Installation and use sites

This balance is designed for reliable weighing results in common use conditions.

As long as you choose the right location for your balance, you will get accurate and fast readings.

Observe the following precautions at the installation site.

- ▲ Place the balance on a stable level surface;
- ▲ Do not install near radiators or in direct sunlight to protect the balance from extreme heat and temperature fluctuations;
- ▲ Protect the balance from direct airflow caused by open doors and windows;
- ▲ Avoid vibration when weighing;
- ▲ Protect the balance from high humidity, water vapor and dust;
- ▲ Do not expose the unit to extreme humidity for long periods of time; if a cooler unit is brought into a relatively warm environment it may result in non-permissible condensation (condensation of air humidity on the unit). In this case, it is necessary to acclimatize the disconnected equipment at room temperature for approximately two hours.
- ▲ Avoid the effects of static electricity on the weighing load or weighing container. If electromagnetic fields or static electricity are generated, or if the power supply is unstable, the display may show large deviations (inaccurate weighing results). In this case the site must be changed.

■ Unpacking, Inspection and Installation

Open the package and check all parts carefully to make sure there is no damage and all package parts are complete. As follows:

- | | | |
|-----------------|-------------------------|---------------------------------|
| 1. Scales | 4. Weighing pan support | 7. Power adapter |
| 2. Display unit | 5. Windproof ring | 8. Country-specific power plugs |
| 3. Scale pan | 6. Windproof base plate | 9. Operating manual |

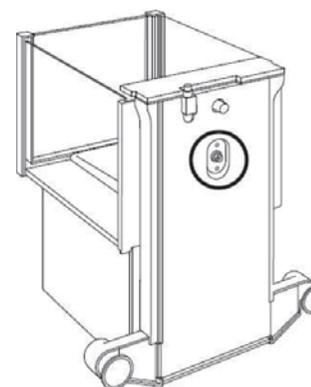


The balance must be disconnected from the power supply before any installation or assembly work can begin.

- ▲ Remove the transportation fixture at the lower end of the balance



Note: Remove the stop screw from the bottom of the balance before use. Refer to steps ① and ② below.



▲ Installing the Balance in the Intended Workplace
The correct installation location will directly determine the accuracy of the analytical balance's weighing results.

▲ Place the following parts in the correct order

- Windproof base plate (round)
- Windshield ring
- Pan support
- Weighing pan

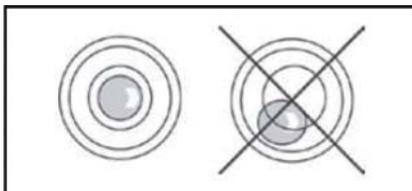
▲ Connecting the display to the balance

Since the display terminal is not securely attached to the balance, the display can be placed around the balance as much as you like, but not farther than the maximum allowable length of the cable.

■ Adjustment of horizontal bubble

Place the balance on the same level as the ground screw until the level bubble on the balance is within the designated circle.

Caution:



▲ Check periodically that the balance is in the horizontal position

■ Turn on the power



Select the power plug for the specified country and plug it into the power adapter to check that the voltage receive value on the balance is set correctly.



Do not connect the balance to a power supply unless the information on the instrument (sticker) matches the local supply voltage. Use only DynaTek's original power adapters. Do not use other brands of power adapters without DynaTek's permission.

Caution.

- Check that the power cord is not damaged before commissioning.
- Make sure that the power adapter does not come into contact with liquids.
- The power plug must be available at all times.
- Connect the power adapter to the connection socket on the back of the balance and to the power supply, the display will light up, and once the balance is energized, the indicator light will light up.



■ Preliminary Commissioning

In order for the electronic balance to display accurate results, your balance must reach operating temperature (see section 1 Warm-up time). During warm-up, the balance must be connected to a power source (mains, battery or cell). The accuracy of the balance is affected by the local gravitational acceleration.

■ Peripheral device connections

Disconnect the balance from the power supply before connecting or disconnecting additional equipment (printer, computer) to the data interface.

Use only the accessories and peripherals provided by Dyna Specialties with this balance, as they provide the best results with the balance.

10. Calibration

Since the value of gravitational acceleration varies from place to place on the earth, each balance must be calibrated to coincide with the gravitational acceleration of its location (only if the balance is not factory calibrated to coincide with the local gravitational acceleration) in accordance with the physical principles of weighing.

This calibration process must be carried out during initial commissioning, site changes and ambient temperature fluctuations.

To obtain accurate weighing values, it is recommended that the balance be calibrated periodically during weighing operations. Observe stable ambient conditions, allow some warm-up time for the balance to stabilize the display, and make sure that there are no objects on the pan.

Caution.

- Calibrate the balance with a weight as close as possible to the maximum range of the balance.
- Stable environmental conditions are required, and the balance needs some warm-up time to stabilize the display.
- Make sure there is no object on the pan.

■ Calibrate with the recommended calibration weights.

After adjusting the balance to C9-3 by clicking the balance SET key and Print key, perform the following actions.

0.0000 g

CAL

Press the CAL key until the display shows "CAL 100".

CAL 100

TARE

Press the TARE key to select "CAL 200".

CAL 200

CAL

Press the CAL key

CAL ...

Calibration in progress

CAL ..dn

Wait a few seconds for the CAL dn to be displayed, carefully place the required calibration weight (200 g) in the center of the pan, and close the windshield door.

CAL ..up

Wait a few seconds for CAL up to be displayed, remove the calibration weights.

CAL .End

Wait for the balance to show CAL End of calibration.

The balance automatically returns to weighing mode after successful calibration.

■ Calibration with 100g weights

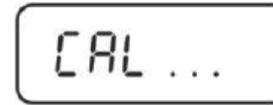
It is possible to calibrate with an optional 100g weight, but this is not ideal for technical measurements (except for balances with a range of 120g).



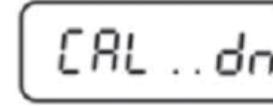
Press the CAL key and the display shows "CAL 100".



Press the CAL key



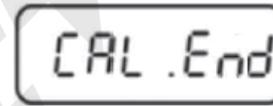
Calibration in progress



Wait a few seconds for the CAL dn to be displayed, carefully place the desired calibration weight (100g) in the center of the pan, and close the windshield door.



Wait a few seconds for CAL up to be displayed, remove the calibration weights.



Wait for the balance to show CAL End of calibration.

After successful calibration, the balance will automatically return to weighing mode.

Note: Before calibrating the balance, please adjust the level to keep the balance horizontal and warm up the balance for more than 30 minutes.

11. Basic Operations

■ Start



Once the balance is energized, the indicator light will illuminate.



To turn on the power, press the On/Off key.



Balances perform a display test
When the weight display appears, the balance is ready for weighing
The balance performs a display test

■ Switching to standby mode



Press the ON/OFF key and the display will disappear.
The power symbol will be displayed



Note:

- In standby mode, the balance can be operated without warming up after powering on.
- If the balance needs to be turned off completely, disconnect the power supply.
- The mode of the balance after startup is the mode before shutdown

■ Zeroing

For optimum weighing results, the balance needs to be reset to zero before weighing.



Unloading the balance
Press the tare key



Wait until the balance shows zero

■ 样品称重



Place the weighed items and close the windshield



Wait for the balance to stabilize and read the weighing results.

OVERLOAD WARNING: Shocks and overloads exceeding the maximum load (maximum range) specified for the balance are strictly prohibited, subtract a possible overweight load, which may damage the balance, exceeding the maximum load will indicate "E" on the display, remove the weighing system or reduce the sample.

Unit Change

When the balance is set in C9-3 mode, the weighing value can be switched to the available weighing and application units by repeatedly pressing the "MODE" key.

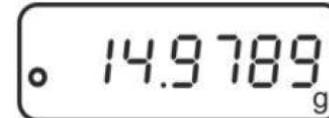
g ⇄ oz ⇄ ct ⇄ lb ⇄ Pcs ⇄ % ⇄ mg

Weighing with containers

The weight of any weighing container can be removed by pressing the "TARE" key and the following weighing program shows the net weight of the goods being weighed.



zero the scales



Place the empty weighing container and the reading will appear on the display.



When the balance reading has stabilized, press the tare key.



Balance display zero



Weighing an object, the balance displays the net weight.

Note:

- When the balance is unloaded, the stored tare value is displayed as a negative value.
- To delete the stored tare value, remove the load from the weighing pan and press the tare key.

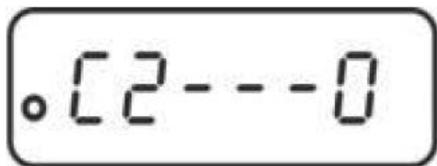
12. Functional applications

■ Counting Weighing

When the balance is set to C9-3 mode, the average part weight (i.e. reference) must be known before the balance can count the number of parts.

Place a certain number of parts to be counted, the balance derives the total weight and divides it by the number of parts (the so-called reference number), and then counts on the basis of the calculated average part weight.

▲ Selecting the number of samples

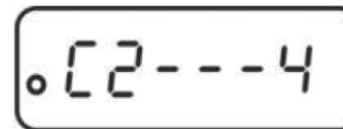


Calling up the menu item "C2" in weighing mode, see menu overview

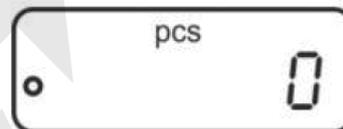


Select the desired number of samples with the "Print key", press the "Tare key". Confirm the setting, press the "On/Off" key to exit the menu, press the "Tare" key. Press "Tare" to confirm "Save". The balance automatically returns to weighing mode.

▲ Select Application



Repeatedly press the "MODE" key until the screen displays "Pcs".



▲ Zero/Tare

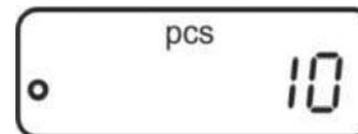


Press the "Tare Key" to zero the balance or to tare the balance when using the weighing container.

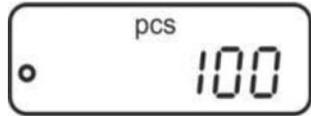
▲ Placement of samples



Place the same number of samples according to the set reference number. Press the "SET" setting key, the balance is now in counting mode and all units on the pan are counted.



▲ Count



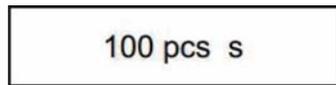
Place the remaining sample on the scale and read the number of pieces.

▲ Switching display between number of pieces and weight



Use the "MODE" key to switch the display to the available units, see the section on changing units.

▲ Print



Print the displayed values by connecting the optional printer and pressing the print key.

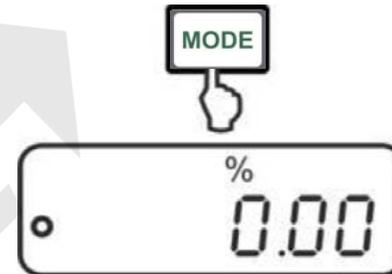
Caution:

- Pay attention to the minimum weight required for counting weighing (see Chapter 1 Technical Data).
- The reference weight is stored even after the balance is turned off, until the reference is reset.

■ Percentage Measurement

When the balance is set in C9-3 mode, percentage measurement is the percentage weight display associated with a reference weight equal to 100% of the weight.

▲ Recall Application



Repeatedly press the "MODE" key until the screen displays "%"

▲ Reference setting (100% value)

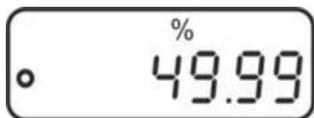


Place a reference weight corresponding to 100% of the weight and press the "SET" key to save.

▲ Remove the reference weight



▲ Percentage determination



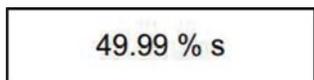
Place the item to be weighed on the balance. The weight of the sample is shown on the display in the form of its percentage of the reference weight.

▲ Toggle display between percentage and weight



Use the "MODE" key to switch the display to the available units, see the chapter on changing units.

▲ Print



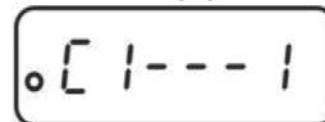
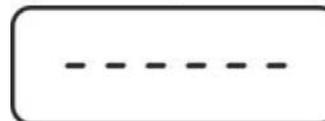
Print the displayed values by connecting the optional printer and pressing the "Print key".

Even after the balance is turned off, the reference weight (100%) is stored until the reference is reset.

13. Menu Functions

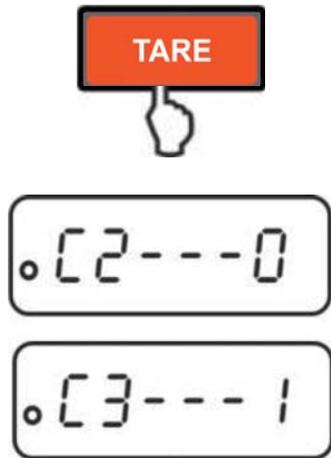
■ Menu Navigation

▲ Enter the menu



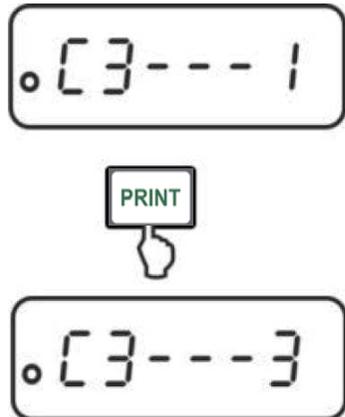
In the weighing mode press the "SET" key, then press the "PRINT" key, the first menu item "C1" shows the current settings of the first menu. The first menu item "C1" shows the current settings of the first menu.

▲ Select menu item



Press the "Tare" key to select one by one the individual menu items displaying the current settings.

▲ Change Settings



Pressing the "Print Key" changes the setting of the selected menu item. Each time you press "Print", the next setting is displayed.



Confirm the setting with the "Tare key" and the next menu item will be displayed. Either perform further settings or exit and save the menu (see steps 4 and 5).

▲ How to save settings



Press the On/Off key, the screen will display "SAVE".

Any changes made can be saved by pressing the "Tare" key and the balance automatically returns to weighing mode.

■ Menu overview

Menu Options	Setting Options	Description
C1: Calibration mode	C1 - 0	Internal weight calibration (internal calibration balances only)
	C1 - 1	External weight calibration (external calibration balances only)
C2: Count sampling	*C2-0	Take 10 samples as the base sample size
	C2 - 1	Take 20 samples as the base sample size
	C2 - 2	50 samples were taken as the base sample size
	C2 - 3	100 samples were taken as the base sample size
	C2 - 4	Take 1000 samples as the base sample size
C3: Zero tracking	*C3 - 0	No zero tracking
	C3 - 1	1d
	C3 - 2	2d
	C3 - 3	3d
	C3 - 4	4d
	C3 - 5	5d
	C3 - 6	Factory Setup Mode

Menu Options	Setting Options	Description
C4: Baud rate	C4 - 0	1200
	C4 - 1	2400
	C4 - 2	4800
	*C4 - 3	9600
C5: Data output	C5 - 0	Automatic output of stable weighing values
	C5 - 1	Instruction output
	C5 - 2	continuous output
	*C5 - 3	Output when the print key is pressed
C6: Keystrokes	*C6 - 0	opens
	C6 - 1	cloture
C7: Motor rotation	C7 - 0	Internal motor rotation
	C7 - 1	Inner school motor does not rotate
C8: Degree of immunity	*C8 - 0	low
	C8 - 1	center
	C8 - 2	high
	C8 - 3	unavailable

Menu Options	Setting Options	Description
C9: Density mode selection	C9 - 0	Liquid density measurement program
	C9 - 1	Solid density measurement program
	C9 - 2	Single powder density measurement program
	C9 - 3	Close the density measurement program and return to the weighing state

Note:

The values marked with * are factory defaults.

14. Operating instructions for density settings

Media Selection

▲ In the power-on state, it is the weighing interface, both 0.0000. Press **SET** key to display ----, then press the **TARE** key to enter the setting.

▲ Continuously press the Zero key to adjust to C9 status (set the density function to be measured), press the Print key to adjust the value of C9-Y.

C9-0 is the liquid density measurement program, C9-1 is the solid density measurement program, C9-2 is the single powder density measurement program, C9-3 is to close the density measurement program and return to the weighing state.

Media Parameter Selection

▲ According to the density function selected in C9, press Set key to display, and then press tare to enter the parameter setting. Press the set key to display , and then press the tare key to enter the parameter setting.

▲ Parameter setting steps.

- Tare key to increase the parameter
- Print key to decrease the parameter
- Set key to move to change the position of the decimal point.

For example: the current LCD display 10000, at this time press the print or tare can only press 0.0001 to increase or decrease, press the set key after the LCD will display 1000.0, at this time press the print key or tare key, you can press 0.001 to increase or decrease; and so on, the maximum increase or decrease is 1;

(For example, the density of the liquid is known to be 1.0010, you can press the set key, and then press the T key / print key to adjust the number of digits to display 10,000, then press the set key will display the decimal point, press the set key continuously until the decimal point to move to 1,000.0, set the completion of the decimal point position, press the T key to change the value of the decimal point three digits after the value of 1)

Note:

To test the density of the fluid, you need to know the density of the known pituitary gland, and then set the density of the pituitary gland as in the previous step.

■Save to exit

Press the mode key to save and exit, the power off key does not do any operation to exit.

■Testing

First put the pendant into the disk in air, press the mode key, then take down the pendant and wait for the balance to return to zero, then put it into the water and press the mode key, then the data appeared is the density of the liquid.

■Density formula

C9-0 Liquid density formula $D = W1 / (W1 - W2) * \text{density of the medium}$

C9-1 Solid density formula $D = W1 * \text{auxiliary liquid density} / (W1 - W2)$.

C9-2 Powder density formula $D = W1 * \text{auxiliary liquid density} / (W1 + W3 - W2)$.

■Density Print Format

Density data print function print format: W1: ***** W2: *Carbon*
D: **Carbon**

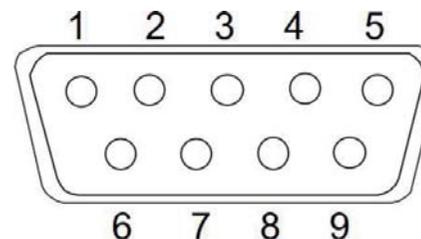
15.RS232C interface

The balance is equipped with an RS232C interface for connection to peripheral devices (printer, computer).

The following conditions must be met in order to successfully connect the balance to the peripheral device.

- Connect the balance with a cable that matches the interface of the peripheral device.
- The communication parameters (baud rate, data bits and parity bits) of the balance and the peripheral device must match. The data exchange is asynchronous using the ASCII code.

■Technical data



Pin 2: Transmit data
Pin 3: Receive data
Pin 5: Signal ground

Baud rate 1200 / 2400 / 4800 / 9600 selectable

Parity bit 8 bits, no parity bit / 1 stop bit / 1 start bit

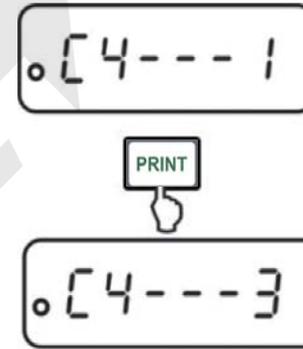
■ Interface Cables

	2	—————	2	
Scales 9 needles	3	—————	3	Computer 9 holes
	5	—————	5	
	2	—————	2	
Scales 9 needles	3	—————	3	Printer 25-pin
	5	—————	7	

■ Interface Parameters

▲ Baud rate

In this menu, the data transfer applies to different RS232C peripherals. The baud rate determines the rate of data transfer via the serial interface. For trouble-free data transfer, the balance and the peripheral devices must be set to the same value.



Calling the menu item "C4"

Use the Print Key to select the desired setup options.

- C4-0 1200 baud rate
- C4-1 2400 baud rate
- C4-2 4800 baud rate
- C4-3 9600 baud rate

Save/Return to Weighing Mode

▲ Output conditions

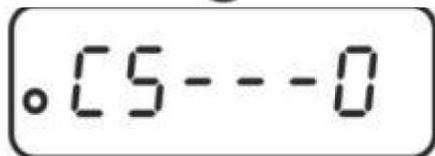
The type of data transfer is determined by this menu item.



Calling the menu item "C5"



Use the Print Key to select the desired setup options.
 C5-0 Stabilized weighing value automatic output
 C5-1 Command output
 C5-2 Continuous output
 C5-3 Output when print key is pressed



Save/Return to Weighing Mode

■ Computer key commands

Command		Functionality
0	4F	On/Off Key Function
T	54	Peel button function
C	43	Calibration key function
M	4D	Mode key function
P	50	Print Key Function

16. Repairs, maintenance



Disconnect the unit from the operating voltage before performing any maintenance, cleaning or repair work.

■ Cleaning

- ▲ Do not use aggressive cleaning agents (solvents or similar substances), but clean with a damp cloth moistened with a mild soap foam.
- ▲ Do not allow any liquid to be spilled into the unit.
- ▲ Wipe with a dry, soft cloth. Loose residual samples/powders can be carefully removed using a brush or manual vacuum cleaner.
- ▲ Spilled weighing objects must be removed immediately.

■ Service and maintenance

- ▲ The unit should only be turned on by an authorized and trained service technician from DEANTEC.
- ▲ Disconnect the power supply before turning on the unit.

17. Fault Detection

In the event of an error in the programmed procedure, turn off the balance and disconnect it from the power supply. The weighing process must be restarted from the beginning.

Fault phenomenon	Possible causes
Display does not light up	<ul style="list-style-type: none"> •The balance is not turned on •Power connection interrupted (power cord not plugged in/wrongly plugged in) •Power supply interruption
Unstable display value	<ul style="list-style-type: none"> •Airflow/air movement •Tabletop/floor vibration •Contact between the scale and other objects •Electromagnetic fields/static charging (if conditions permit, change the site or turn off interfering equipment) • Electromagnetic fields/static charging (if conditions permit, change the site or turn off interfering equipment)

Fault phenomenon	Possible causes
Obvious errors in weighing values	<ul style="list-style-type: none"> •Not clearing zero before weighing •Incorrect calibration •Balance not placed on a stable surface •Huge temperature fluctuations •Not warmed up • Electromagnetic field/static charging (if conditions permit, change the site or turn off interfering equipment)

■Distilled Water Density Table

T/°C	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
10.	0.99973	0.99972	0.99971	0.99970	0.99969	0.99968	0.99967	0.99966	0.99965	0.99964
11.	0.99963	0.99962	0.99961	0.99960	0.99959	0.99958	0.99957	0.99956	0.99955	0.99954
12.	0.99953	0.99951	0.99950	0.99949	0.99948	0.99947	0.99946	0.99944	0.99943	0.99942
13.	0.99941	0.99939	0.99938	0.99937	0.99935	0.99934	0.99933	0.99931	0.99930	0.99929
14.	0.99927	0.99926	0.99924	0.99923	0.99922	0.99920	0.99919	0.99917	0.99916	0.99914
15.	0.99913	0.99911	0.99910	0.99908	0.99907	0.99905	0.99904	0.99902	0.99900	0.99899
16.	0.99897	0.99896	0.99894	0.99892	0.99891	0.99889	0.99887	0.99885	0.99884	0.99882
17.	0.99880	0.99879	0.99877	0.99875	0.99873	0.99871	0.99870	0.99868	0.99866	0.99864
18.	0.99862	0.99860	0.99859	0.99857	0.99855	0.99853	0.99851	0.99849	0.99847	0.99845
19.	0.99843	0.99841	0.99839	0.99837	0.99835	0.99833	0.99831	0.99829	0.99827	0.99825
20.	0.99823	0.99821	0.99819	0.99817	0.99815	0.99813	0.99811	0.99808	0.99806	0.99804
21.	0.99802	0.99800	0.99798	0.99795	0.99793	0.99791	0.99789	0.99786	0.99784	0.99782
22.	0.99780	0.99777	0.99775	0.99773	0.99771	0.99768	0.99766	0.99764	0.99761	0.99759
23.	0.99756	0.99754	0.99752	0.99749	0.99747	0.99744	0.99742	0.99740	0.99737	0.99735
24.	0.99732	0.99730	0.99727	0.99725	0.99722	0.99720	0.99717	0.99715	0.99712	0.99710
25.	0.99707	0.99704	0.99702	0.99699	0.99697	0.99694	0.99691	0.99689	0.99686	0.99684
26.	0.99681	0.99678	0.99676	0.99673	0.99670	0.99668	0.99665	0.99662	0.99659	0.99657
27.	0.99654	0.99651	0.99648	0.99646	0.99643	0.99640	0.99637	0.99634	0.99632	0.99629
28.	0.99626	0.99623	0.99620	0.99617	0.99614	0.99612	0.99609	0.99606	0.99603	0.99600
29.	0.99597	0.99594	0.99591	0.99588	0.99585	0.99582	0.99579	0.99576	0.99573	0.99570
30.	0.99567	0.99564	0.99561	0.99558	0.99555	0.99552	0.99549	0.99546	0.99543	0.99540

■Ethanol density table

T/°C	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
10.	0.79784	0.79775	0.79767	0.79758	0.79750	0.79741	0.79733	0.79725	0.79716	0.79708
11.	0.79699	0.79691	0.79682	0.79674	0.79665	0.79657	0.79648	0.79640	0.79631	0.79623
12.	0.79614	0.79606	0.79598	0.79589	0.79581	0.79572	0.79564	0.79555	0.79547	0.79538
13.	0.79530	0.79521	0.79513	0.79504	0.79496	0.79487	0.79479	0.79470	0.79462	0.79453
14.	0.79445	0.79436	0.79428	0.79419	0.79411	0.79402	0.79394	0.79385	0.79377	0.79368
15.	0.79360	0.79352	0.79343	0.79335	0.79326	0.79318	0.79309	0.79301	0.79292	0.79284
16.	0.79275	0.79267	0.79258	0.79250	0.79241	0.79232	0.79224	0.79215	0.79207	0.79198
17.	0.79190	0.79181	0.79173	0.79164	0.79156	0.79147	0.79139	0.79130	0.79122	0.79113
18.	0.79105	0.79096	0.79088	0.79079	0.79071	0.79062	0.79054	0.79045	0.79037	0.79028
19.	0.79020	0.79011	0.79002	0.78994	0.78985	0.78977	0.78968	0.78960	0.78951	0.78943
20.	0.78934	0.78926	0.78917	0.78909	0.78900	0.78892	0.78883	0.78874	0.78866	0.78857
21.	0.78849	0.78840	0.78832	0.78823	0.78815	0.78806	0.78797	0.78789	0.78780	0.78772
22.	0.78763	0.78755	0.78746	0.78738	0.78729	0.78720	0.78712	0.78703	0.78695	0.78686
23.	0.78678	0.78669	0.78660	0.78652	0.78643	0.78635	0.78626	0.78618	0.78609	0.78600
24.	0.78592	0.78583	0.78575	0.78566	0.78558	0.78549	0.78540	0.78532	0.78523	0.78515
25.	0.78506	0.78497	0.78489	0.78480	0.78472	0.78463	0.78454	0.78446	0.78437	0.78429
26.	0.78420	0.78411	0.78403	0.78394	0.78386	0.78377	0.78368	0.78360	0.78351	0.78343
27.	0.78334	0.78325	0.78317	0.78308	0.78299	0.78291	0.78282	0.78274	0.78265	0.78256
28.	0.78248	0.78239	0.78230	0.78222	0.78213	0.78205	0.78196	0.78187	0.78179	0.78170
29.	0.78161	0.78153	0.78144	0.78136	0.78127	0.78118	0.78110	0.78101	0.78092	0.78084
30.	0.78075	0.78066	0.78058	0.78049	0.78040	0.78032	0.78023	0.78014	0.78006	0.77997