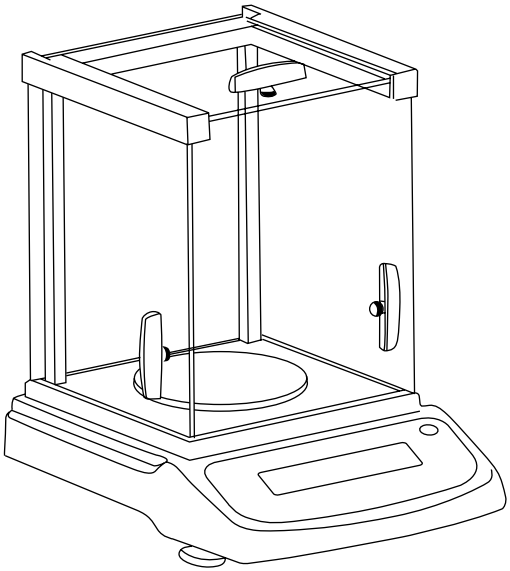
SERIES

FH

100 / 200 / 2000 / 6000



EN

CE

OPERATION MANUAL

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ENGLISH

SAFETY INFORMATION

To avoid unnecessary demage to the balance, please pay attention to the following tips:

- Please do not use this balance in dangerous área.
- Only the trained technicians could operate this balance.
- Please turn off the power of the balance before connect it or disconnect it with other facilities.
- If the environment requires a higher safety standard, please follow the relevant installation instructions.
- Excessive electromagnetic interference will make the displayed value in this balance change. Once the interference is dismissed, the balance could operate in normal way.
- Please avoid any liquid on the surface of the balance. A piece of lightly damp cloth is allowed to wipe the balance.

INSTALLATION

- Please make sure the local voltage is in line with the rated voltage on the name board.
- Please pay special attention when use RS-232 as the pins location might be incompatible with our facilities. Please check the pins locations before the connection and turn off the connection of different configuration.

- If the facility or the power cord has apparent damage, please turn off the power, put it or them in a safe place and do not use it or them before they are fixed.

- This balance could only be connected to our accessories or optional fittings. We are not responsible for any modification the operator makes to our balance, including using the facilities and cable which are not supplied by us. However, we are always ready to offer the operation norms information.

- Please do not open the balance. If the guarantee lable is damaged, our quality guarantee will automatically cease being effective.

- If the balance does not work well, please contact your local distributor or our customer service center.

PREPARATORY BEFORE USING

STORAGE

This balance requires an environment which is free from excessive high or low temperature, corrosive, vibration, air current and collision.

Unfolding the package

- Unfold the package and check if there is any outer damage of the balance.

- If there is outer damage, please refer to section routain maintenance and troubleshooting.

- Please keep all the package for possible transportation in the

future. When pack the balance, please remove all the cables to avoid unnecessary damage.

Package list

- The balance.
- Weighing pan.
- Pan support.
- Power adapter.
- User manual.

INSTALLATION OF THE BALANCE

Put it in a proper place, please avoid the following situations:

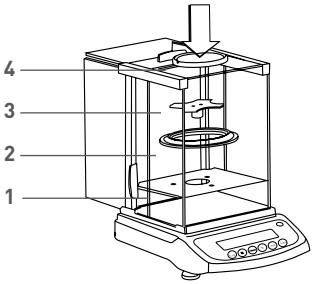
- Much heat and direct sunlight.
- Air currents and vibrations.
- Excessive moisture.

Usage Conditions

Please do not lay the balance in a quite damp palce for a long time. If the balance is transferred from a lower temperature environment to a higher temperature environment, please lay it there with power off foraround 2 hours.

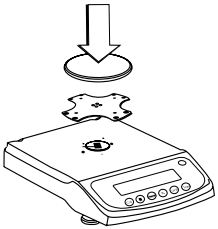
Install the balance with wind shield

- Assemble the parts in the indicated order.



Install the balance with round weighing pan

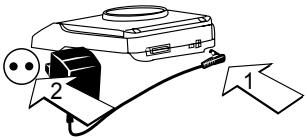
- Installation Sequence.
- Pan support.
- Weighing pan.



Connect the Power Adapter

Only the power adapter offered by us is allowed.

- Connect the power adapter to the balance.
- Connect the power adapter to the power socket.



Install the External Facilities

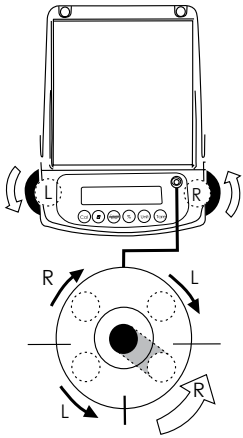
Turn off the balance before connect it or disconnectit with external facilities such as the printer or the computer).

Warm-up Time

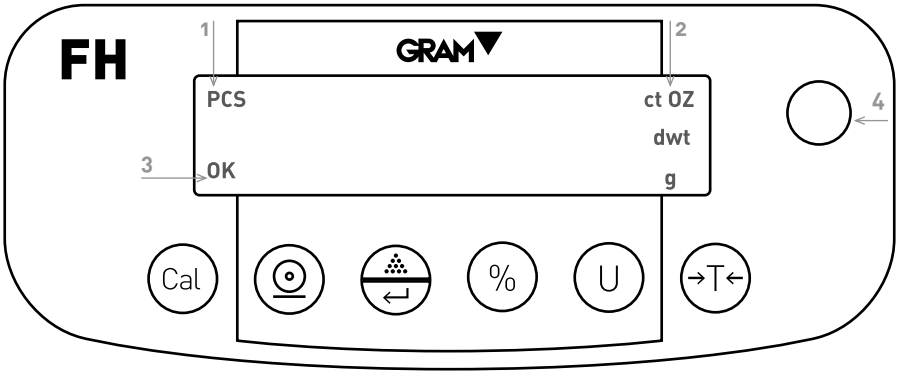
To assure the measure accuracy, the balance must be warmed up for 30 minutes before normal operation.

Adjust the Level Gauge Purpose

- Adjust the level guage of the balance. The level guage needs to be adjusted once its place is changed. The two front bottom bolts are used to adjust the level guage.
- Spin the two bolts as shown in the figure until the bubble in the level gauge is in the ceter of the circle.
- Normally, it needs to be adjusted repeatedly.



DISPLAY AND KEYS DESCRIPTION



1. Count sign.
2. Weighing units.
3. Stability sign.
4. Level gauge.

OK - Reading shown is stable

g - Reading shown is given in grams

OZ - Reading shown is given in ounces (1g = 0.03527396200 oz)

ct - Reading shown is given in carats (1g = 5.0000000000 ct)

dwt - Reading shown is given in pennyweight (1g = 0.64301493100 dwt)

% - Reading shown is given in percent weight

PCS - Reading shown is given in as a counting

------- The balance is developing a stable reading

UNABLE – Error operation

HHHHH – The weight on the pan excedes the capacity of the balance

LLLLLL – The pan is not properly seated or has been removed

Calibration / Adjustment key

Print / Output key

Count / Function confirmation key

Percentage key

Unit conversion key

Tare key

CALIBRATION

To decide the accuracy of the balance through test the difference between thereading and the actual weight of the object on the weighing pan.

Prerequisite of calibration:

1. There is no loading on the weighing pan.
2. Press the (→T←) key.
3. The interior signals are stable.

Procedure

1. Adjust the level guage and warm it up for 25 minutes.
2. Press the (→T←) key.
3. Press the (Cal) key, the display will read its full range, such as **3000**.
4. Press the (→T←) key repeatedly, it reads the calibration point within the range (such as 2000, 1000...).
5. Choose one calibration point and place the right weight on the pan. Press the (Cal) key, the display will show **CAL---**.
6. When the external calibration is finished, the balance reads the value of the weight on the pan (such as 3000).

BASIC WEIGHING

Procedure

1. Plug in the power, the balance will automatically proceed system initialization and deduct the tare weight.
2. Place the container on the weighing pan.
3. Press the key.
4. Place the simple object in the container.
5. Print the weight value pressing the key.

COUNTING MODE

Displayed sign: **PCS**

Procedure

1. Place the empty container on the weighing pan.
2. Press the key.
3. Choose the amount of the reference samples. Press the key, the balance reads **"qTy10"**, press the key, choose the number of samples (10, 25, 50, 100). The bigger number, the more accurate for the counting results.The choosed reference number will be saved until a new reference number is set or the power is off.
4. Place the right samples on the weighing pan or in the container.
5. Press key, the balance reads the amount number of the samples.

6. Add the rest of ítems, the balance will show the total pieces.
7. If you want print the result, press the key.
8. To return to normal weighing mode, press the U key, the symbol **PCS** disappears.

PERCENT DEVIATION

Displayed sign: **%**

Procedure

1. Press the →T← key.
2. Put the reference object on the weighing pan. When the reading is stable, press the % key, it reads **"100.000"** or **"100.00"**, which relates to the accuracy 100.00% of the balance. Meanwhile, it displays **"%"**.
3. Remove the reference object, the balance Reads **"0.000"** or **"0.00".**
4. Place the goal object on the weighing pan.
5. Wait for the **OK** on the display, read the display, the display indicates percent deviation from the reference.
6. Press the U key, the balance returns to normal weighing mode.

To test the percentage a weight in a container varies from a reference, please follow the below steps:

1. Put an empty container on the weighing pan. Press the →T← key.
2. Place the standard object into the container.

3. Press the (%) key. Wait for the stable display, it reads **“100.000”** or **“100.00”.**

4. Remove the container with standard object. Put another same container on the weighing pan, wait for the stable display, it reads **“0.000”** or **“0.00”.**

5. Add the goal object in the container, wait for tyhe stable display, the value displayed is the percentage the weight of the goal object varies from the standard weight.

6. Press the (U) key to return to normal weighing mode.

7. If necessary, the weight of the goal object could be printed out.

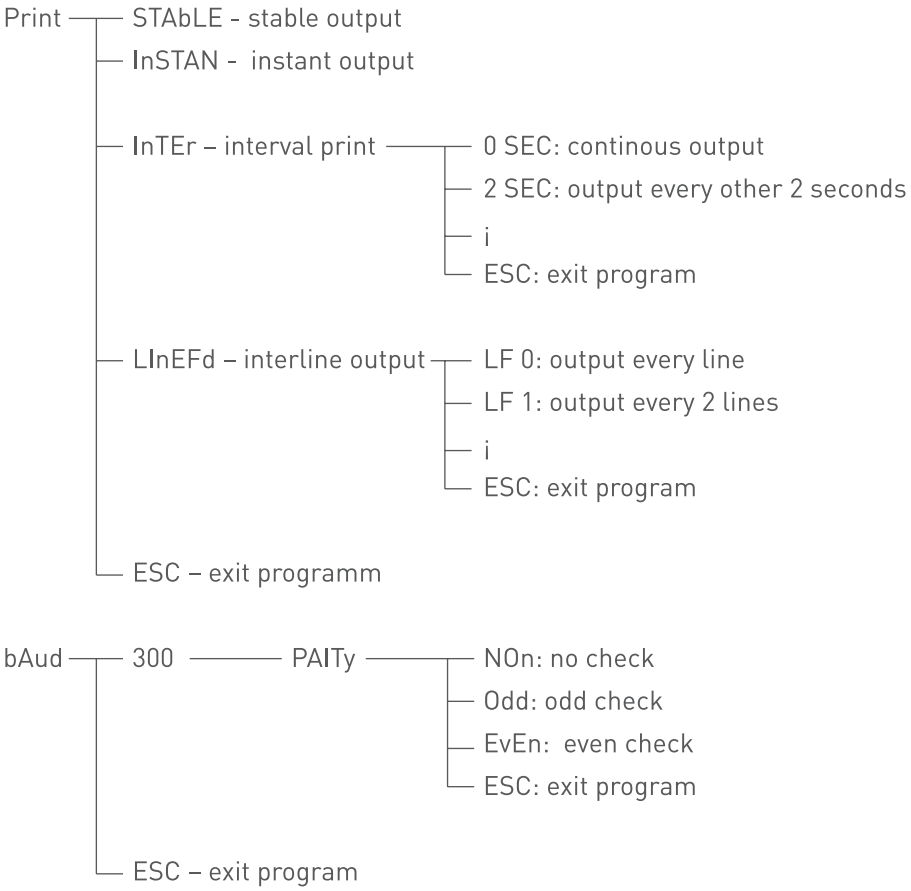
WEIGHING UNITS

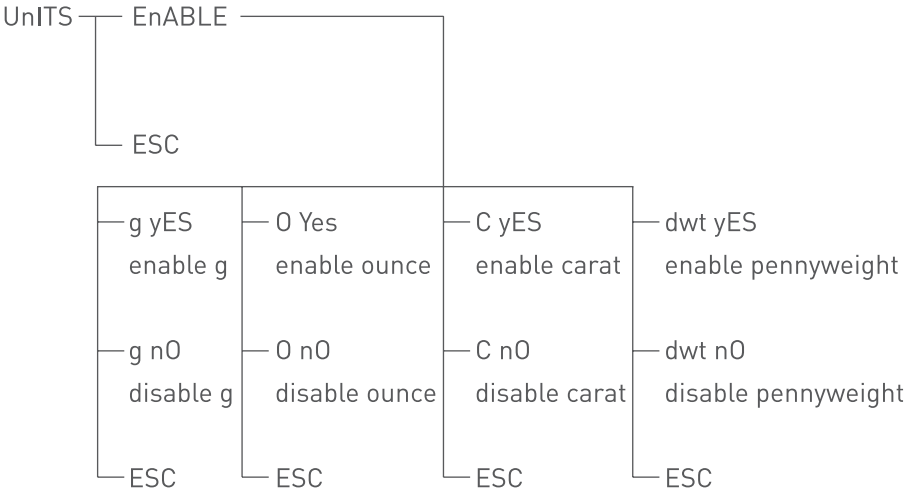
1. Press the key (U) to select the desired unit weight (g, oz, dwt) or weighing mode (normal weighing, counting or percentage mode).

Enabling weighing units

The units function can be programmed to turn certain weighing units on or off. To enable or disable certain units of measure, perform the following procedure.

1. Press the (Cal) key while pressing (↵) key, the balance reads **“PrInT”.**
2. Press the (→T←) key repeatedly until it reads **“unIT”.**
3. Press the (↵) key, the display reads **“g yes”** which means g available for use. Press the (↵) key to confirm. To disable **“g”** as the unit, press the (→T←) key, then the display reads **“g no”**, press the (↵) key to confirm.
4. Follow the steps above to enable or disable Oz, Ct or dwt as the unit of measure.


Print
STAbLE - stable output
InSTAN - instant output
InTEr – interval print
0 SEC: continous output
2 SEC: output every other 2 seconds
i
ESC: exit program
LInEFd – interinline output
LF 0: output every line
LF 1: output every 2 lines
i
ESC: exit program
ESC – exit programm
bAud
300
PAITy
NOn: no check
Odd: odd check
EvEn: even check
ESC: exit program
ESC – exit program



VEr ——— TEST 20

Firmware Version

CAL T
ambient temperature
compensation

- FACT TP: restore factory setups
- uSEr TP:
  user temperature compensation
- ESC: exit program

ESC: Exit

USER SETUPS

The balance could be set up to meet individual requirement.

1. Press the key while pressing the key to enter to setup program.
2. Press the key to choose the ítem to be set up, then press to confirm.
3. Anytime to exit the setup program, press the key, it reads **"ESC"**, then press the to confirm.

PRINT SETUPS

There are three print types:

STABLE Print: print a stable reading when it is attained.

INSTANT Print: print immediately after press the key.

INTERVAL Print: print at predeterminated time intervals.

Note: The print function is separate from the line feed setup, i.e set the print function first then set the number of line feeds.

To set the print type, use the following procedure:

1. Press the key while pressing the key, the display will show **"PrInt".**
2. Press the key, the display will show **"STAbLE"**, which indicates stable print as the default.
3. Press the key to choose the print type and confirm pressing the .
4. Press the key until the display reads **"InTEr"**, press the key, the display will show **"SEC"**.

5. Press the key repeatedly to see the predeterminated time interval and press the to confirm. The message **“0 SEC”** means countinous print.

6. Press the key to return to weighing mode.

7. After entering print setup, press the key repeatedly to see predetermined line foods (1-18) Choose the proper line feeds, press the to return to normal weighing mode.

SETTING THE BAUD RATE

1. Press the key while pressing the key, the display will show **“PrInT”.**

2. Press the key, the balance reads **“bAud”.**

3. Press the key, the balance reads **“300”**.

4. Press the key repeatedly, the balance display the other baud rates. Choose the proper rate and press key to confirm. The balance reads **“ParITy”** and begins parity check.

5. Press the key, the balance reads **“nOnE”** (no check) for the first.

6. Press the key, it reads the other check types; **“Odd”** indicates odd check and **“EvEn”** indicates even check.

7. Choose the proper check type and press the key to confirm, the balance now returns to normal weighing mode.

RESTORING THE FACTORY DEFAULT SETUP

1. Press the key while pressing the key the display will show **"PrInT"**.

2. Press the key repeatedly until it reads **"InITIA".**

3. Press the key to confirm, the display reads **"BUSY"** and the returns to weighing mode. Factory default setup is finished.

COMMUNICATION WITH A COMPUTER

The balance keyboard functions can be accessed via the RS-232 interface. The following commands are available:

U – **:** units conversion

T – **:** tare function

C – **:** calibration with external standard weight

P – **:** print function

% - **:** percent function

 # - **:** instant print

M – **:** counting function

When a balance is connected to a computer, it is suggested that immediate print # be used. In response to this command the balance will transmit whatever number or message appears on the balance display.

The string format output is shown below:

A B C D E F G H I J K L M

A - +/-: Signs field, usually no display as a space when it is a positive number, **"-"** is displayed when it is a negative number.

B – G: Number and decimal field, spaces are used when there are less than six digits.

H – I: Spaces fields.

J: Unit field, it describes the units of the number being transmitted. Your balance will transmit **G** for grams, **O** for ounces and **C** for carats.

K: Stable character, it corresponds to the **OK** indicator on the display. **S** means the reading is stable, space means the reading is not stable.

L: Return character.

M: Line feeds character, it indicates the line feeds.

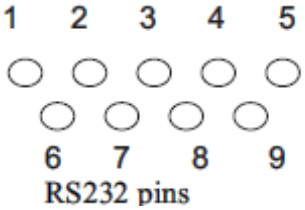
RS-232 INTERFACE HARDWARE

This balance adopts the transmit and receive lines of standard RS-232.

The data format is:

1 start bit.
8 data bits include parity.
1 stop bit.

The instruction to connect the balance to external device is as follows:



RS232 pins

Pin description

2 – TXD - - - scale transmits data

3 – RXD - - - scale receives data

5 – GRD - - - signal ground

Note: "Handshake" signals, such as **"clear to send"** (CTS) are not used. The peripheral must have a mínimum buffer (15 characters).

It is suggested that the máximum recommended cable lenght is 15 meters, the load impedance of the device connected should be between 3000 and 7000 ohms with no more than 2500 pf shunt capacitance.

ROUTINE MAINTENANCE AND TROUBLESHOOTING

Troubleshooting

Only the trained professionals are allowed to do repair work. There is a risk for the user if non-professionals do the repair.

Clearance

- Turn off the balance and unplug the data cables.
- Avoid the liquid into the balance.
- Any corrosive cleaner (solvent) is forbidden to use.
- Wipe the balance with a piece of soft cloth.
- Remove the weighing pan before wipe the balance.
- Remove the shield ring and pan support with the weighing pan which helps avoid damage to the weighing system.

Clearing the stainless steel surface

All the stainless Steel components need to clean regularly. Remove the weighing pan and thoroughl clean it with a damp cloth or sponge. The cleaner applicable to stainless Steel are recommended. Wipe the stainless Steel surface of the balance first and then clear the stainless Steel weighing pan. Make sure there is no dirt and then wipe the stainless Steel component again. Dry the balance by air. If necessary, smear the proper oil on the surface as additional protection.

Note: After remove the weighing pan and the pan support, avoid any liquid or solid pellet into the installation hole.

Safety check

If the balance could not work normally:

- Cut off the power immediatelly, keep and do not use it again.
- Keep it in a safe place to make sure it won´t be used for the moment.
- Inform the nearest Service Center or your Distributor. The repairman must have had profesional training.

TROUBLESHOOTING

DISPLAY	REASON	SOLUTION
- - - - - -	The balance could not get a stable reading or the transducer is damaged.	Contact your local service center.
HHHHH	The real weight is 5% higher than its capacity or the transducer is damaged.	Unload or contact your local service center.
LLLLLL	a) The weighing pan is not on. b) There is wrong connect with the pan. c) The transducer is damaged.	a) Install the right weighing pan and press the →T← key. b) Clear the connect. c) Contact your local service center.

NOCAL	Calibration is unresponsive.	Refer to calibration section, check if it is the right calibration weight.
UNABLE	Lack of data or wrong data with which the balance could not perform the function.	Refer to user manual.
UNSTABLE READING	Unstable the ambient environment (excessive vibration or air current) or there is wrong connect with the pan.	Put the balance in another place. Clear the wrong connect.
NO DISPLAY	No work voltage no connection with transformer.	Check the power supply circuit and the instrument, connect the transformer.
Apparent wrong weighing display	No calibration or the tare weight is deducted.	Calibrate the balance Deduct the tare weight before weighing.

If there is any other trouble, please contact your local distributor or service center.

TECHNICAL CONDITIONS

AC-DC adapter

Input: 220V/110V, **output:** 7.5V (+15% to -20%) 48-60Hz

Power consumption: Maximam=16W, Average=8W

GUARANTEE

This scale is guaranteed for one year from the delivery date. The guarantee covers any fabrication defect of the material.

During this period **GRAM PRECISION, SL,** covers the manpower and the spare parts necessary for the reparation of the scale.

This guarantee does not cover the failures caused by an inappropriate use or overcharge.

The guarantee does not cover the freight cost (transport) necessary to repair the scale.

002/14032017

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