U.S. SOLID

Analytical Balance
Instruction Manual

CATALOGUE

This analytical balance works on electromagnetic force compensation technology and micro processor which implements high speed stabilization and high reliability. It can be widely used in industry, agriculture, commerce, schools, scientific research and other institutions to quickly weighing the quality and quantity of objects.

Safety Precautions
Verify that the AC Adapter input voltage matches the local AC power supply.
Use the scale only in dry locations.
For best results, use the scale in the specified optimum operating temperature.
Use your scale with care, gently loading items to be weighed onto the center of the pan. Avoiding rough treatment will aid in the life of your scale.
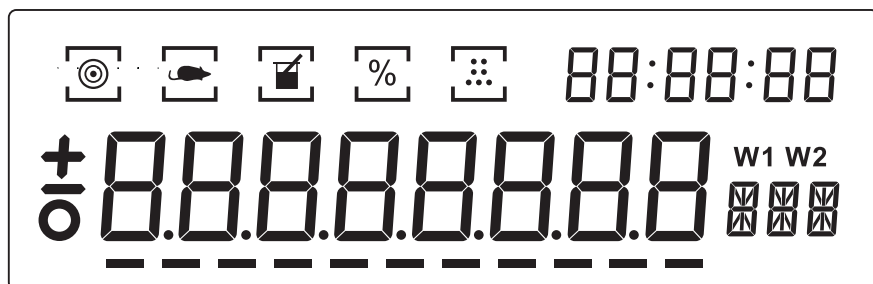Do not suggest to use in below environment.

windshield

pan

leveling feet

bubble level   panel
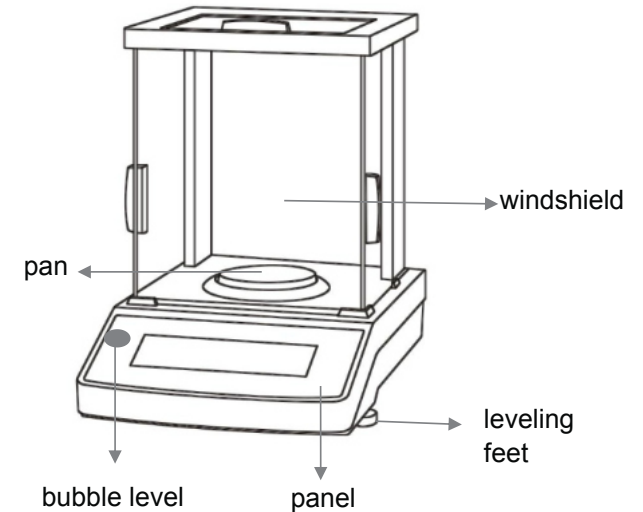
Button:

DISPLAY INFORMATION

No.	Display	Description
1	◎	sensitivity
2		Dynamic weighing
3		Density determination
4	%	Percent weighing
5		Piece counting
6	88:88:88	Time setting
7	**W1**	Weight in air
8	**W2**	Weight in liquid
9	✦	Positive weight value
10	—	Negative weight value
11	O	Stable value
12	– – – – – –	Progress bar
13		Unit display

Data sheet

Electronic Analytical Balance(0.1mg external calibration)

Model	1004	1204	2004	2204	3004	3204	4204	5204
Capacity	0--100g	0--120g	0--200g	0--220g	0-300g	0--320g	0-420g	0-520g
Readability	0.1mg							
Stable time	2s							
Preheating	30-60 mins							
Weighing units	g/oz/ct/mg							
Min weighting	0.1mg							
Repeatability	±0.1mg				±0.2mg			
Linearity	±0.2mg				±0.3mg			
Interface	RS232/USB(optional)							
Pan size	φ90mm							
Product size	31cm*21.2cm*35cm							
N.W.	5500g							
Power	AC110V-240V							

Electronic Analytical Balance(0.1mg internal calibration)

Model	1004N	1204N	2004N	2204N	3004N	3204N	4004N	5004N
Capacity	0--100g	0--120g	0--200g	0--220g	0-300g	0--320g	0-400g	0-500g
Readability	0.1mg							
Stable time	2s							
Preheating	30-60 mins							
Weighing units	g/oz/ct/mg							
Min weighting	0.1mg							
Repeatability	±0.1mg				±0.2mg			
Linearity	±0.2mg				±0.3mg			
Interface	RS232/USB(optional)							
Pan size	φ90mm							
Product size	31cm*21.2cm*35cm							
N.W.	5500g							
Power	AC110V-240V							

Data sheet

Electronic Analytical Balance(0.01mg external calibration)

Model	10035	10055	10085	20035X	20055	20085
Capacity	100g/30g	100g/50g	100g/80g	200g/30g	200g/50g	200g/80g
Readability	0.1mg/0.01mg					
Stable time	3s					
Preheating	30-60 mins					
Weighing units	g/oz/ct/mg					
Min weighting	0.1mg/0.05mg					
Repeatability	±0.1mg/±0.05mg					
Linearity	±0.2mg/±0.05mg					
Interface	RS232/USB（optional）					
Pan size	φ90mm					
Product size	31cm*21.2cm*35cm					
N.W.	5500g					
Power	AC110V-240V					

Electronic Analytical Balance(0.01mg internal calibration)

Model	10035N	10055N	10085N	20035N	20055N	20085N
Capacity	100g/30g	100g/50g	100g/80g	200g/30g	200g/50g	200g/80g
Readability	0.1mg/0.01mg					
Stable time	3s					
Preheating	30-60 mins					
Weighing units	g/oz/ct/mg					
Min weighting	0.1mg/0.05mg					
Repeatability	±0.1mg/±0.05mg					
Linearity	±0.2mg/±0.05mg					
Interface	RS232/USB（optional）					
Pan size	φ90mm					
Product size	31cm*21.2cm*35cm					
N.W.	5500g					
Power	AC110V-240V					

Data sheet

Electronic Analytical Balance(1mg external calibration)

Model	1003	2003	3003	5003	6003	10003	20003
Capacity	0--100g	0--200g	0--300g	0--500g	0-600g	0--1000g	0--2000g
Readability	1mg						1mg
Stable time	1s						3s
Preheating	30-60 mins						
Weighing units	g/oz/ct/mg						
Min weighting	1mg						
Repeatability	±1mg						±3mg
Linearity	±2mg						±4mg
Interface	RS232/USB（optional）						
Pan size	φ90mm						
Product size	31cm*21.2cm*35cm						
N.W.	5500g						
Power	AC110V-240V						

Electronic Analytical Balance(1mg internal calibration)

| Model	1003N	2003N	3003N	5003N	6003N	10003N
Capacity	0--100g	0--200g	0--300g	0--500g	0-600g	0--1000g
Readability	1mg					
Stable time	2s					
Preheating	30-60 mins					
Weighing units	g/oz/ct/mg					
Min weighting	1mg					
Repeatability	±1mg					
Linearity	±2mg					
Interface	RS232/USB（optional）					
Pan size	φ90mm					
Product size	31cm*21.2cm*35cm					
N.W.	5500g					
Power	AC110V-240V					

① Put the balance on the stable desk, the desk can not be moved.
Adjust the 2 Leveling Feet on the bottom, until the bubble is
centered in the circle, then install the scale pan.
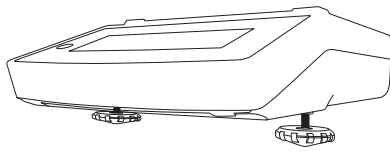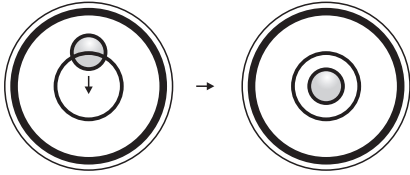
bubble right above	clockwise rotate two leveling feet
bubble right below	counterclockwise rotate two leveling feet
bubble left	counterclockwise rotate left leveling foot clockwise rotate right leveling foot
bubble right	counterclockwise rotate right leveling foot clockwise rotate left leveling foot

② Plug in the AC adapter

③ Press"ON"button and the display shows"0.0000", the scale enters into the
weighing mode.
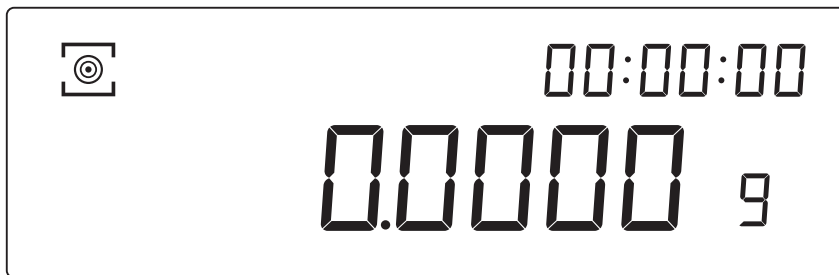
When the operating temperature changes, put the balance in the new place
for 2 hours under the "power on" state to adapt the balance to the new
temperature.

Attention: If the number on display is not stable at the first usage, it is
caused by the temperature difference of the environment, you can
press "TARE"button repeatedly and let it stand for 30 minutes.

3.1 In order to get accurate weighing result, balance should be
calibrated before the below usage scenarios.

① Before first use
② Balance power off for long time or power error.
③ After changing the operating environment.
④ Regularly in weighing procedure.

3.2 Choose the calibration (follow the
sequence) Press and hold"ON"

① when display show "SET-C" release the button.

②
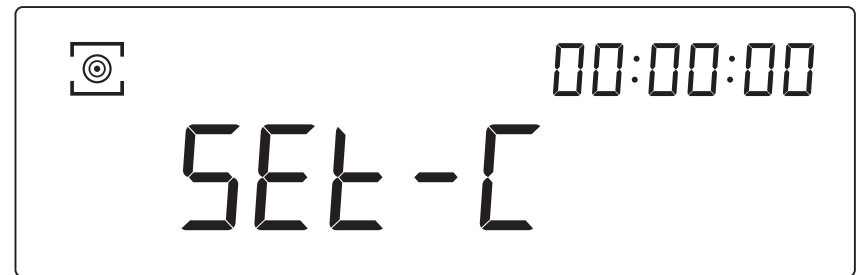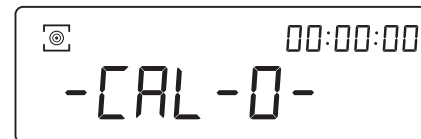
"CAL-0"external calibration(weight)
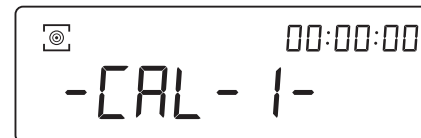
"CAL-1"internal calibration weight
(internal calibration balance)
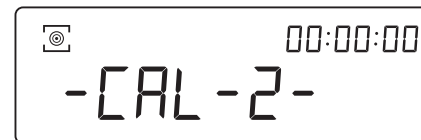
"CAL-2"internal calibration weight
value adjustment(internal
calibration balance)

③ press "TARE"to save and exit the setup.

3.3 Single-point calibration follow the sequence

1 press the button"TARE", the display shows "0.0000".

```
◎                    00:00:00

      0.0000 g
```

2 press"CAL"button, balance enters into calibration procedure, the display shows"CAL--0", internal calibration balance will make the calibration automatically
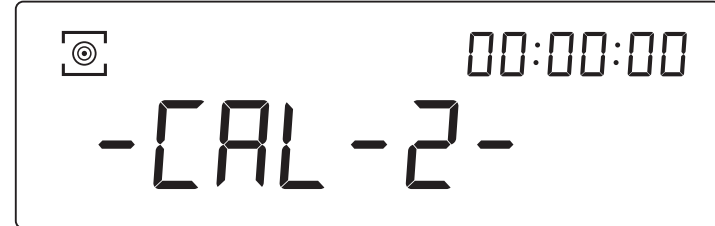
```
◎                    00:00:00

   -CAL-0-
```

3 the display shows from"CAL-0"to "CAL-200"and flashes, put on the 200g weight for FA2204X model

```
◎                    00:00:00

   CAL-200
```

4 display shows"200.0000",remove the weight and finish the calibration.

3.4 internal calibration weight value setting (internal calibration balance)

1 choose the calibration"CAL-2"(follow 3.2.2)

```
◎                    00:00:00

   -CAL-2-
```

2 press "CAL" button, the display shows"CAL-DN"

```
◎                    00:00:00

   CAL-dn
```
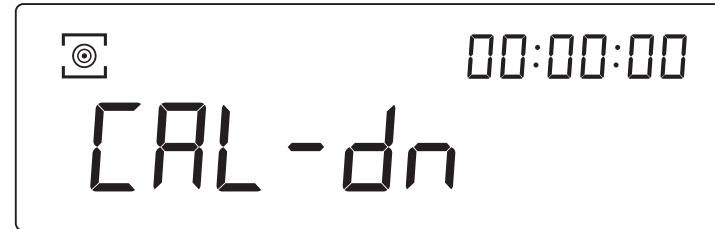
3 put on the standard calibration weight accordingly
4 the display shows "CAL-UP", remove the weight.

```
◎                    00:00:00

   CAL-uP
   _ _ _ _ _ _ _ _
```
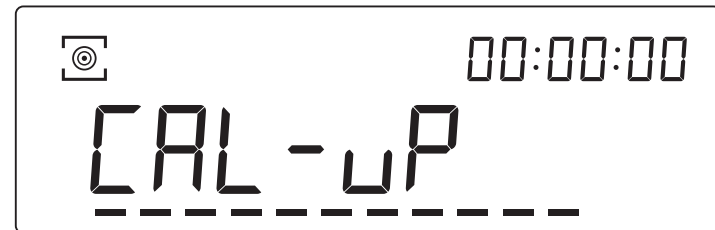
5 wait for the calibration finished, display shows"0.0000"

```
◎                    00:00:00

      0.0000 g
```

3.3 Linearity calibration

Balance without loading, and display shows "0.0000", it can be operated for linear calibration.

```
⊚                        00:00:00
        0.0000 g
```

1 press and hold "ON" button, balance enters into main menu mode, start to change function

2 wait to the display shows "SET-C", release the "ON" button

```
⊚                        00:00:00
        SEt-C
```
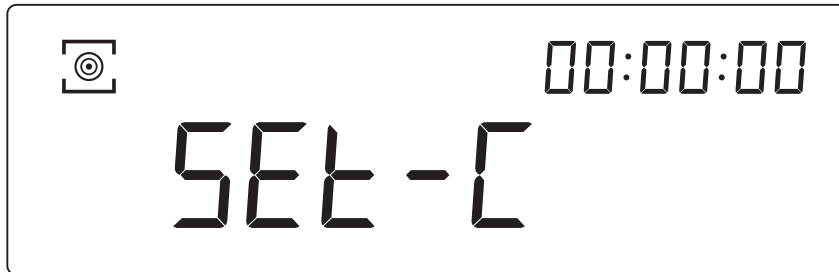
3 press and hold the "CAL" button for 3 seconds and release the button, the display show "LIN-0".

```
⊚                        00:00:00
      L in  -0
```
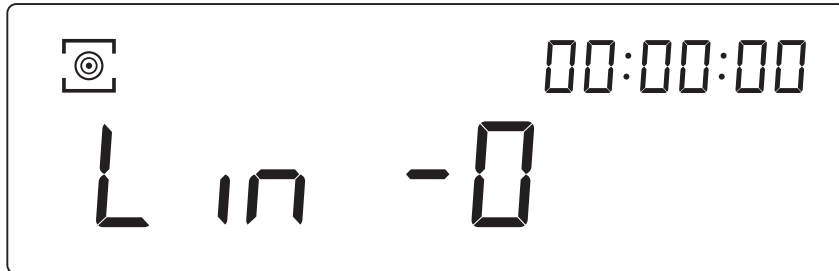
4 put on the calibration weight accordingly, finish the calibration procedure.

4.1 Unit conversion

1 under the weighing interface press and hold "PRINT" to change the unit

2 the default unit:g,oz,ct,mg

```
⊚                        00:00:00
       0.000000 oz
```
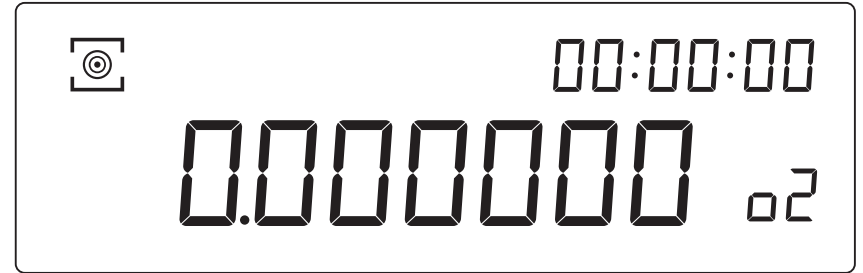
other unit is optional

4.2 piece counting –– setting

1 press and hold "ON" button under weighing interface, balance enter into main menu.

2 wait until the display to show "SEt - 0", release the "ON" button.

```
⊚                        00:00:00
       SEt - 0
```
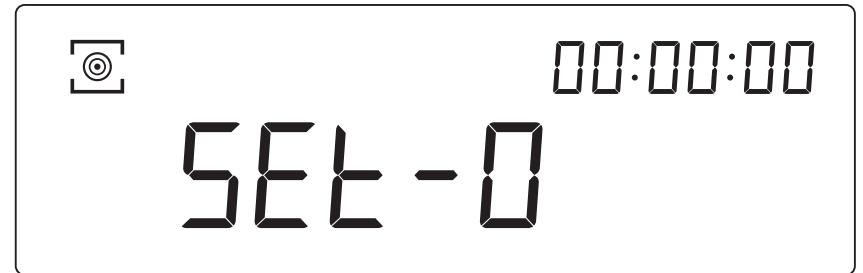
3 press and hold "PRINT", enter into piece counting sample quantity setting, the display shows "-COU-*-"

4 press and hold "PRINT" to set up piece counting sample quantity, the display will show

```
⊚        00:00:00      ⊚        00:00:00      ⊚        00:00:00
-COU- 10-             -COU-25-             -COU-50-
```

-COU-10-
sample quantity 10pcs
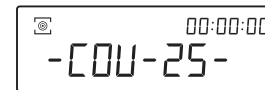
-COU-25-
sample quantity 25pcs
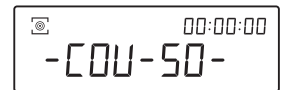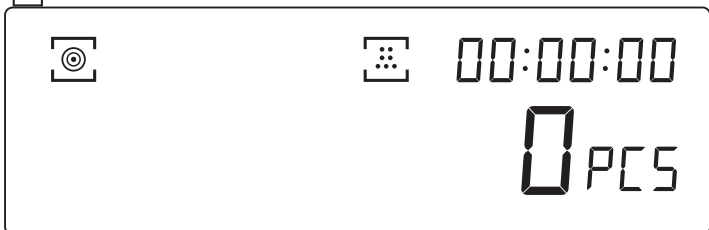
-COU-50-
sample quantity 50pcs

5 press "TARE" to save and exit.

4.2 Piece counting-- weighing

1. press and hold "PRINT"button under weighing interface, the display shows "0 PCS"and ⊞ , release the "PRINT" button

```
◎                    ⊞      00:00:00

                            0 PCS
```

2. put the sample quantity which has been set in SET-0.
3. press "ON" button to confirm the sample weight, and start weighing.
4. If the same sample is used the second time, no re-sampling is required.
   Long press "PRINT" button to exit the piece counting and return to the weighing mode.

4.3 Percent weighing

1. press and hold"PRINT"button under weighing interface, the display show"0.00" and % , release the "PRINT" button

```
◎                    %      00:00:00

                            0.00
```
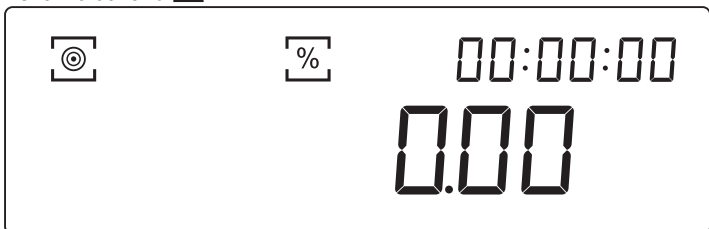
2. put the contrast target sample on the pan (e.g. 100g weight), press "ON"button to save the sample weight, the display shows "100.00".

3. put the contrast on the pan (e.g.50gweight), the figure on the display is the percentage of contrast

```
◎      %     00:00:00          ◎      %     00:00:00
       100.00                         50.00
```
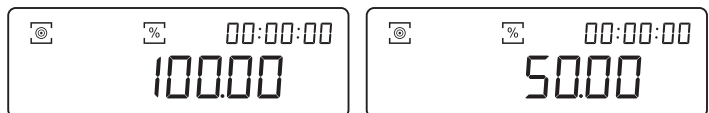
4. If the same contrast is used the second time, no re-sampling is required.
   Long press "PRINT" button to exit the percent weighing and return to the weighing mode.

### 4.4 Density determination (need gravity kit, optional) -- density weighing setting

1. press and hold "ON" button, the balance enters into the main menu mode.
2. when the display shows"SET-d", release the button.

```
◎                            00:00:00

              SEt-d
```
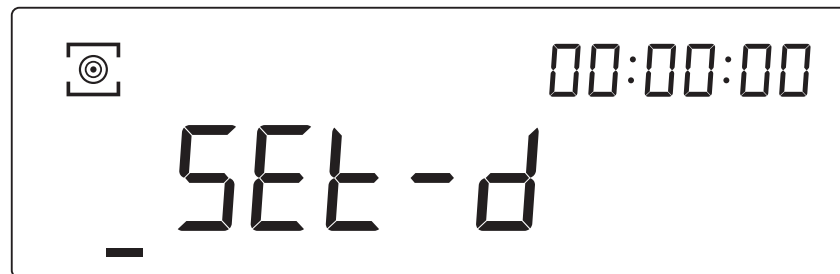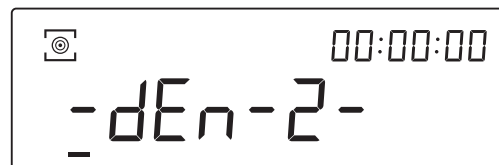
3. press and hold "PRINT", enter into density weighing setting, the display shows "-dEn-*-"
4. press and hold"PRINT to set up density determination, display shows:
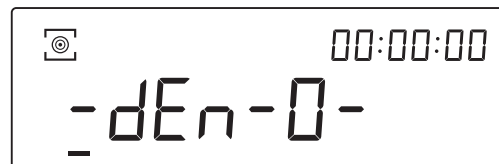
```
◎                            00:00:00

           -dEn-0-
```
-dEn-0- close density weighing
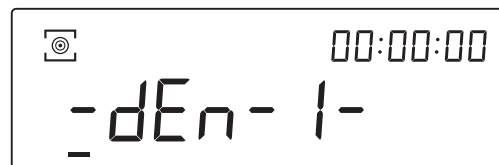
```
◎                            00:00:00

           -dEn-1-
```
-dEn-1- open solid density weighing

```
◎                            00:00:00

           -dEn-2-
```
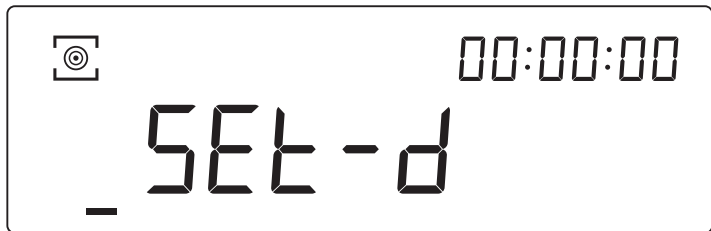-dEn-2- open liquid density weighing

5. press"TARE"to save and exit the setup, display shows W1 in the right corner

4.4 Solid density determination: (-dEn-1-)

1 set up auxiliary liquid density value

2 press and hold"ON"button under 🗲 , balance will enter into the main menu and change

3 release the "ON"button until the display shows "SEt-d",

```
 ◎                        00:00:00

  SEt-d
 _
```

4 press and hold "CAL"button, enter into auxiliary liquid density value setting
Press and hold"CAL"button to increase, press and hold"PRINT" button to decrease

5 press"TARE"to save the density value and exit

6 display shows W1, put the sample on the pan in air.(e.g.screw sample)

```
 ◎    🗲               00:00:00
                0.5834 ᵂ¹g
 _
```
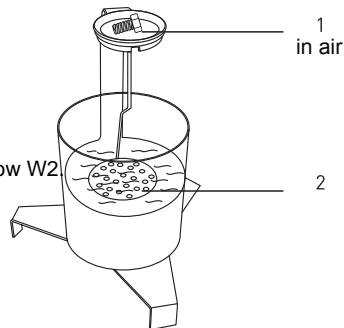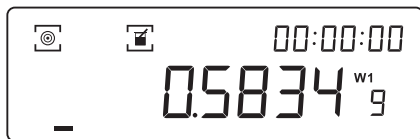
7 press and hold "print" button and display will show W2

```
 ◎    🗲               00:00:00
                0.5834 ᵂ²
 _                          g
```

1
in air

2
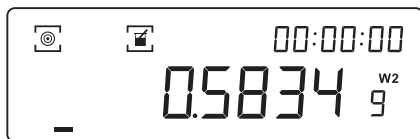
8 weighing the sample in liquid - 2 press and hold"PRINT"button to collect the data

```
 ◎    🗲               00:00:00
                0.5082 ᵂ²
 _                          g
```

9 display will show the result of density (W1\W2 no display

```
 ◎    🗲               00:00:00
               7.7584
 _                          g
```
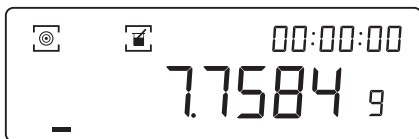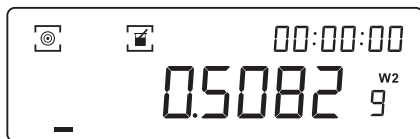
10 press and hold"RPINT"to exit density result

11 Follow 4.4 setting,set the density weighing to"-dEn-0-", press "TARE" button to exit density determination.

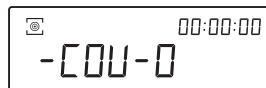## 4.5 Dynamic weighing function–– dynamic weighing setting

press and hold"ON"button under weighing interface, the balance

1 enters into the main menu mode.

2 release the "ON" button until the display shows"SET-5",

```
 ◎                        00:00:00

  SEt-5
```
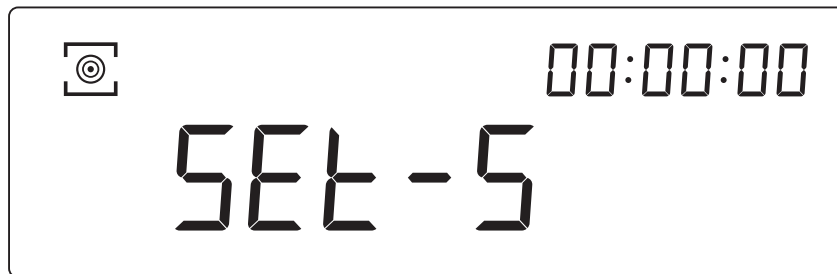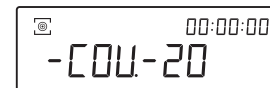
3 press and hold"RPINT"enter into dynamic weighing sampling time setting display shows "-COU-*-".

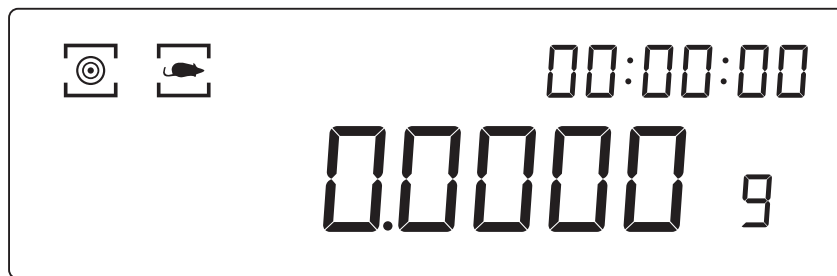4 press and hold "PRINT" to set up dynamic weighing sampling time, display shows:

```
 ◎        00:00:00
 -COU-0
```
-COU-0-
close dynamic weighing

```
 ◎        00:00:00
 -COU- 10
```
-COU-10-
start sampling 10 times

```
 ◎        00:00:00
 -COU-20
```
-COU-20-
start sampling 20 times

5 press"TARE" to save the setting and exit, the display shows 🖭

```
 ◎    🖭               00:00:00

                0.0000
                            g
```

4.5 Dynamic weighing function-- dynamic weighing

1. put the sample on the pan.
2. press and hold"PRINT"above 3 seconds, ☁ will flash, the dynamic weighing starts.
3. ☁ stop flashing, weighing end, display shows the final result.

```
◎  ☁            00:00:00

      6 1.652 1 g
____
```
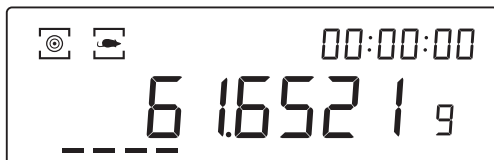
4. press and hold"PRINT"to exit.
5. Follow 4.5 setting, set the dynamic weighing to "-dEn-0-", exit dynamic weighing.

4.6 Baud rate setting

1. press and hold"ON" button under weighing interface, the balance enters into the main menu mode
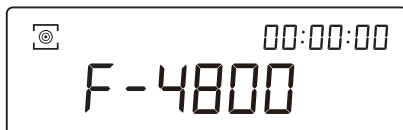2. release "ON" button until the display shows "SET-F",

```
◎                00:00:00

   SEt-F
```
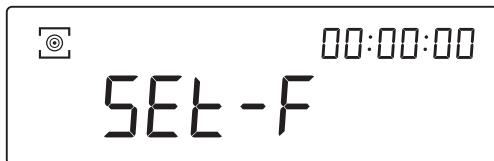
3. press and hold"PRINT"to enter into baud rate setting, display shows:"F-****"
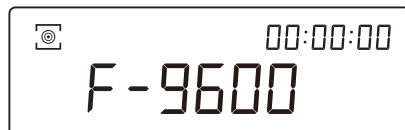4. press and hold"PRINT"to set up baud rate, the display shows:

```
◎                00:00:00

   F- 1200
```

F-1200 baud rate 1200

```
◎                00:00:00

   F-2400
```
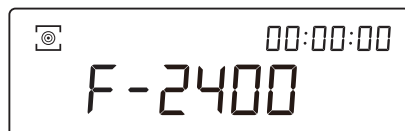
F-2400 baud rate 2400

```
◎                00:00:00

   F-4800
```

F-4800 baud rate 4800
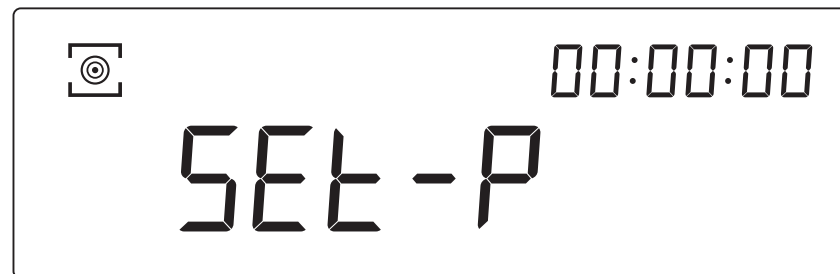
```
◎                00:00:00

   F-9600
```
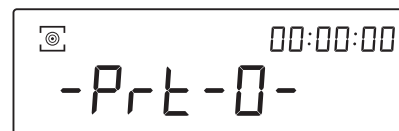
F-9600 baud rate 9600

5. press"TARE"to save the setting and exit.

4.7 Print setting
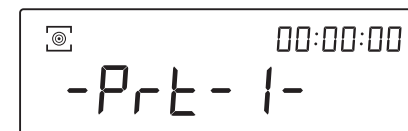
1. press and hold"ON"button under weighing interface, the balance enters into the main menu mode.
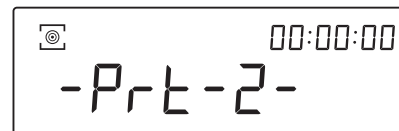2. release"ON"button until the display shows "SET-P",

```
◎                00:00:00

   SEt-P
```

3. press and hold"PRINT"to enter into print setting, display shows "-Prt-*-".
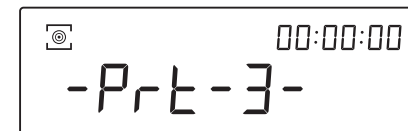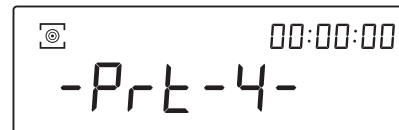4. press and hold"PRINT"to set up print model, display shows:

```
◎                00:00:00
   -Prt-0-
```

-Prt-0- press "PRINT"printing

```
◎                00:00:00
   -Prt- 1-
```

-Prt-1- interval 0.5s continuously printing

```
◎                00:00:00
   -Prt-2-
```

-Prt-2- interval 1s continuously printing

```
◎                00:00:00
   -Prt-3-
```

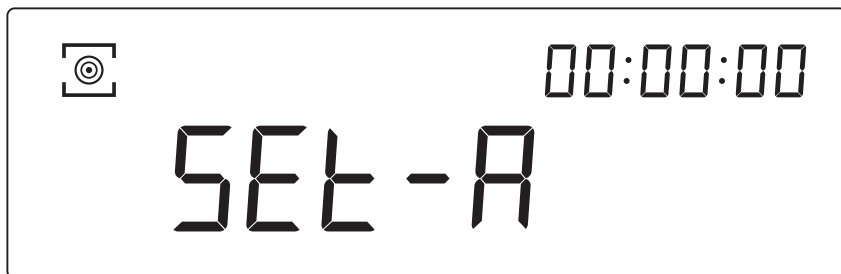-Prt-3- interval 2s continuously printing

```
◎                00:00:00
   -Prt-4-
```

-Prt-4- interval 3s continuously printing

5. press"TARE"to save the setting and exit.
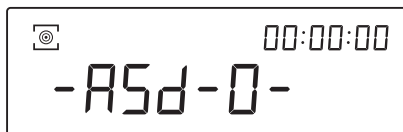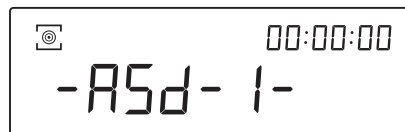
4.8 sensitivity setting

1 press and hold"ON"button under weighing interface, the balance enters into the main menu mode.

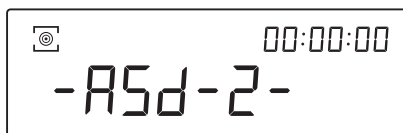2 release"ON"button until the display shows "SET-A",

```
◎          00:00:00
  SEt-A
```

3 press and hold"PRINT"to enter into sensitivity setting, display shows "-ASD-*-".

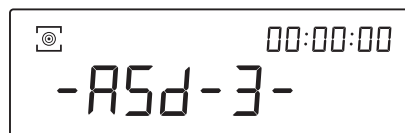4 press and hold"PRINT"to set up sensitivity, the display shows.

```
◎       00:00:00
 -ASd-0-
```
-ASD-0- highest sensitivity

```
◎       00:00:00
 -ASd-1-
```
-ASD-1- high sensitivity

```
◎       00:00:00
 -ASd-2-
```
-ASD-2- medium sensitivity

```
◎       00:00:00
 -ASd-3-
```
-ASD-3-
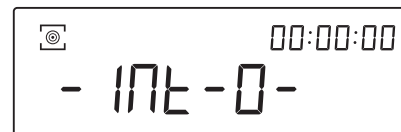
5 press"TARE"to save the setting and exit.

REMARK: factory setting sensitivity "-ASD-3-", suitable for most using environment. Higher sensitivityÿrequired better environment. Do not adjust the sensitivity without consulting the factory.
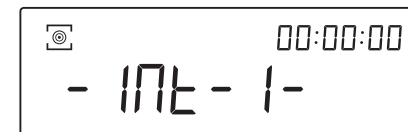
4.9 Filter level setting

1 press and hold"ON"button under weighing interface, the balance enters into the main menu mode.

2 release"ON"button until the display shows "SET-1",

```
◎          00:00:00
  SEt-1
```
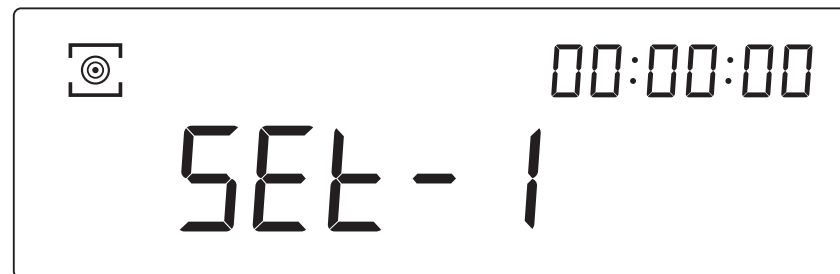
3 press and hold"PRINT"button to enter into filter level setting, the display shows"-Int-*-". press and hold"PRINT"button to set up filter level, the display shows:

4

```
◎       00:00:00
 -INt-0-
```
-Int-0- filter level highest

```
◎       00:00:00
 -INt-1-
```
-Int-1- filter level high

```
◎       00:00:00
 -INt-2-
```
-Int-2- filter level medium
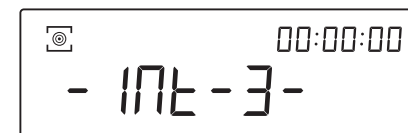
```
◎       00:00:00
 -INt-3-
```
-Int-3- filter level low

5 press"TARE"to save the setting and exit.

REMARK: filter level is the internal calculating time of balance, factory setting is "-Int-2-", do not change it by yourself without professional instruction.

4.10 Time setting

1. press and hold"ON"button under weighing interface, the balance enters into the main menu mode.
2. release"ON"button until the display shows "SET-T",

```
  ◎                          00:00:00
        SEt-t
```
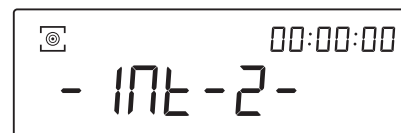
3. press and hold"PRINT"button to enter into clock setting, the display shows"-CLOC-*-".
4. press and hold"PRINT"button to set up time, display shows:

```
  ◎                          00:00:02
        CLOC-0--
```
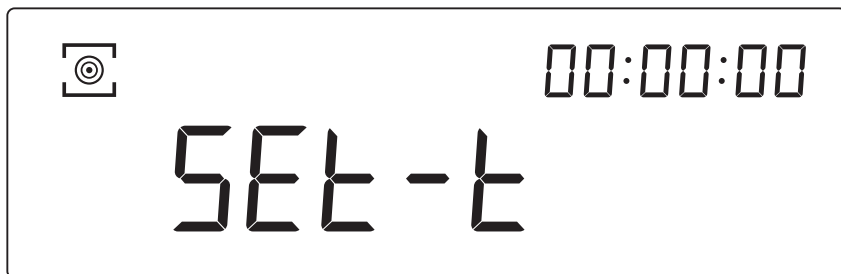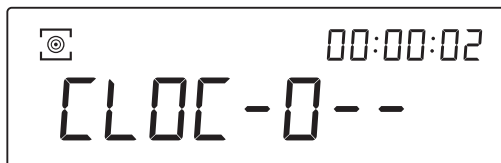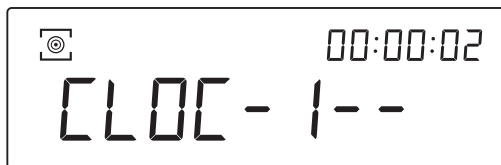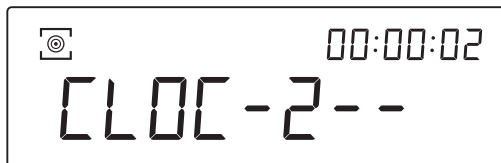- CLOC -0- second

```
  ◎                          00:00:02
        CLOC- 1--
```
- CLOC -1- minute

```
  ◎                          00:00:02
        CLOC-2--
```
- CLOC -2- hour

5. Press "CAL" button to increase, press"ON"button to decrease.
6. press"TARE"to save the setting and exit.

4.11 Interface
RS232 interface
- Connection

Balance (9 pins)   PC/Printer (9 pins)
RXD (Input)   2 ------------------------------------- 2
TXD (Output)   3 ------------------------------------- 3
GND (Ground)   5 ------------------------------------- 5

- The baudrate by default is 9600 bps (see Baudrate setting)
- Data format: 10 bits, 0 as start bit, 1 as stop bit, 8 digits (ASCII code) - No odd and even numbers adjusting
- Data output: by default is continuous mode. The data ouput mode can be changed into press output, timing output and continuous output (see Data output setting)
- Output data format

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Type or Àda ta	data	data	data	data	data or dot	data or dot	data	data	data	unit	unit	unit	return	Line feed

5.TROUBLESHOOTING

Problem	Cause	Solution
No display	No power supply; Fuse damaged; Power transformer is damaged;	Plug in adapter; Change the fuse; Change the power transformer; If problem persists, send the balance to the Technical Service for repair.
Unstable display	Bad working conditions; Air flow Something between the scale pan and working table. The power exceeds its permissible value and is unstable; Static electricity	Improve the working condition, Close the windshield; Remove the pan and clean well the balance surface; Connect the balance to power supply 110-220 V AC Static Elimination
Poor accuracy	Improper calibration The weight of the recipient has not been tared Big temperature difference The balance is not horizontal	Make calibration Make tare Put into suitable enviroment Adjust level of balance

6. COMPONENTS LIST

Balance	1
Balance pan	1
Adapter	1
Instruction manual	1
Weight(external	1
calibration) glove	1