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Weighing Technology

A Higher Level of Precision…

A Higher Level of Performance

Intell-Lab PX Series Analytical Balance

Model PXC-200, PX-200

User Operation Manual

CONTENTS

Intelligent Weighing Technology has more than 50 years experience in the weighing industry,

both in the USA and worldwide. With contacts in over 50 countries including the USA, we provide you with the weighing equipment you need.

When you invest in weighing equipment from Intelligent Weighing Technology, you're really buying peace of mind.

Quality - Scales and balances solidly built from the ground up with superior engineering and components for exacting results.

Value - From bench scales to analytical balances, weighing equipment priced for real-world business applications, with superior service and support.

Experience - Expert advice to help you choose just the right product for your application.

Quality + Value + Experience…it adds up to the Intelligent Investment.

Intelligent Weighing Technology, Inc.

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1. INTRODUCTION

This manual is used for Models PXC-200 and PX-200 Electronic Analytical Balances.

To insure proper operation on the balance, please read this manual completely before you start to use your balance.

Analytical balances are the latest products of years of research, design, development and infield testing. Every balance incorporates the Thermal Separation Technology™, advanced electromagnetic force sensor technology, and superior software technology. They offer the following features:

- Easy to operate and read results from a clear large LCD with a white backlit display;
- Rapid weighing speed is 10 times faster than mechanical balances;
- Able to tare up to the maximum capacity of the balance；
- Multiple weighing modes can be selected；
  1) Normal weighing;
  2) Piece counting;
  3) Percentage weighing;
- Multiple weighing units conversion such as gram, pound, ounce and carat as standard units along with counting and percentage modes.
- A standard RS-232 interface for connecting peripheral devices such as computer or printer;
- Easy to calibrate the balance in three ways:
  1). Auto-calibration

Auto calibration. PXC-200 only. The balance will be calibrated automatically via a build-in calibration weight when time or temperature exceeds the limit;

2). One touch calibration

The balance will be calibrated automatically via a built-in weight just by pressing CAL key; PXC-200 only

3). Manual calibration (PX)

You can also use external calibration weights to calibrate your balance if needed.

2. INSTALLATION

2-1 Unpacking

CAUTION: Handle with care at all times!

Remove the balance from the carton carefully the following items are included:

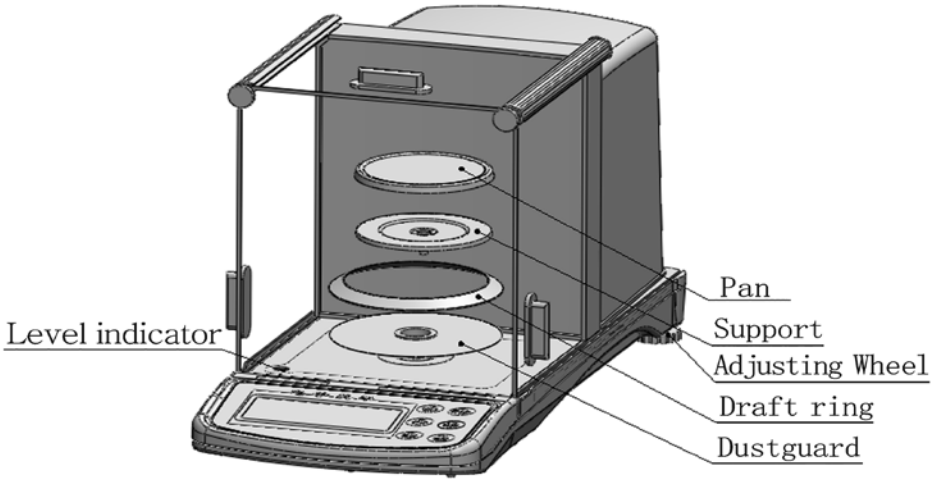
Packing List

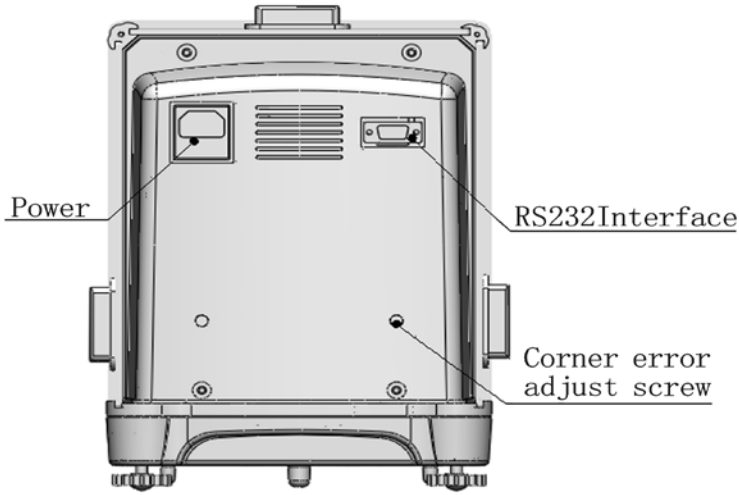
No.	Item	Quantity
1	Main body of the balance	1
2	Pan	1
3	Pan support	1
4	Draft ring	1
5	Dust guard	1
6	AC power cord 120 VAC	1
7	Spare fuse（0.5 A）	1
8	User manual	1
9	Cleaning cloth	1

It is recommended to save the cartons and packing materials for storing and transporting the balance or returning it for service.

2-2 External Description of Balance

2－2 **EXTERNAL DESCRIPTION OF BALANCE**





2-3 Specifications

Model	PXC-200	PX-200
Capacity	200g	200g
Readability	0.0001g (0.01 mg)	
Repeatability	±0.0002g	
Linearity	±0.0002g	
Four-corner	±0.0002g	
Stabilization time	~ 5 sec.	
Sensitivity	2ppm/℃(10℃--30℃)	
Operating temperature	41°F- 85°F (5℃—30℃)	
Pan size	3.5” (90 mm)	
Dimensions (W x H x D)	8 x 11 x 18.1” (205x280x460mm)	
Power	AC 110V 50/60 Hz	

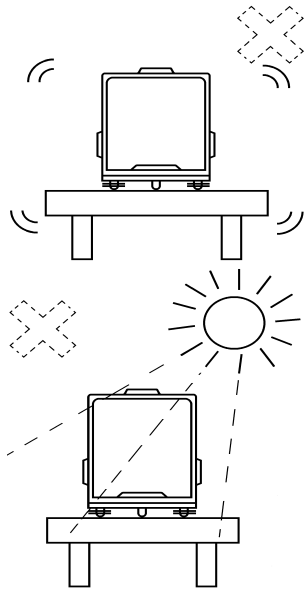
2-4 Environmental Requirements

As a precision instrument, the analytical balance requires an environment which is free from excessive air flow, vibration and temperature or humidity extremes. These factors will adversely affect performance.

- Keep the weighing area ambient, clean and dry at all times;
- The best operating temperature is about 20℃/68℉ at 50% relative humidity;
- Use a stable AC supply;
- Don’t position the balance:
  - In direct sunlight;
  - Next to open windows or a door causing draft or rapid temperature

- changes;
- Near a heater or air conditioner;
- Near vibrating, rotating or reciprocating machinery;
- Near equipment that creates a
- magnetic field or equipment

- On a unstable weighing table;
- In areas containing aggressive chemical vapors;
- In areas where the danger of explosion exists.



2-5 Setting Up Your Balance

CAUTION:

Warm up the unplugged balance at an indoor temperature for two hours whenever it is moved from a colder place into a warmer area, otherwise the accuracy will be affected by condensation inside the balance.

- Place the balance on a stable and level work surface;
- Level the balance by turning the adjusting feet, checking the level indicator on the balance, until the bubble appears in the center of the circle;
- Carefully place the parts in the weighing chamber as follows: dust guard, draft ring, pan support and pan;
- Plug in the AC line cord. (110 Volt 50/60 Hz only)

Check if the balance supply matches your main supply before plugging in.

2-6 Display

g	gram
ct	carat
lb	pound
oz	ounce
∴	piece counting mode
%	percentage mode
○	stable indicator
—	waiting calibration indicator
CAL--0	when calibration is “0”
CAL—F	load the calibration weight
——CAL——	calibrating indicator
CAL—End	calibration is ended
CAL—no	unable to perform calibration
Err--0	when calibration is “0” error
Err--1	calibration error
E	object over the balance maximum capacity
—E	Object under the balance readability
--------	【SET】key available indicator
……..	balance is processing data

3. CALIBRATION

CAUTION: THIS IS A SENSITIVE INSTRUMENT PLEASE TREAT IT CAREFULLY!

Why do we need to calibrate the balance?

Our electronic analytical balance is designed on the equilibrium principle of electronic magnetic force. Among the various factors that may affect the accuracy of balance, is gravity. The quotient of Gravity changes around the world and therefore, calibration at the operational site is most important. It is also good practice to calibrate after moving a balance from one area to another. Use the standard calibration weight (200.0000g) to calibrate (PX-200 or the internal calibration process (PXC-200).

There are three ways to calibrate the analytical balance.

3-1 Manual Calibration (for PX-200)

(1). Remove objects from the pan, press [TARE] key, 0.0000g will be displayed

(2). Press [CAL] key, "CAL--0" will be displayed, after about 3 seconds, "CAL—F" will be displayed

(3) Put 200g（Level F1）external weight on the center of the pan, then close the door of weighing chamber

(4). Press [TARE] key, "200.0000 g" will be displayed after "——CAL——" flashing about 5 to 10 seconds；.

(4) If the difference between displayed value and the real value of external weight is more than ±1, the user needs to calibrate again until the difference is less than ±1.

3.2 Part Auto-Calibration (for PXC-200)

According to parameter setting and parameter setting table, set C1 to C1—0. When you need to calibrate, press [CAL] key, the balance will start calibration.

NOTE: when there is an object on the pan or internal weight is on the internal

weighing system, calibration cannot take place, information will be displayed to show you that you need to calibrate; when the object is removed from the pan, In addition, the user can press [CAL] key again to cancel the calibration. In this mode, the unit will not calibrate with changes in temperature or time.

According to parameter setting and parameter setting table, set C1 to C1—1, when "C1—1" is displayed, press [CAL] key, the value of internal weight will be displayed, press [MODE] key to increase the value, press [PRINT] key to decrease the value, by pressing [MODE] key or [PRINT] key change this value into 200.0000 or the value of the external weight, then press [TARE] key to go back to C parameter setting status, press [TARE] key again to save the value in balance's internal memory. When the user does not want to use manual calibration, the value 200.0000 or other value need to be changed back to factory setting. NOTE! THIS SETTING SHOULD BE USED WITH THE UTMOST CARE AS CHANGING THIS VALUE WILL CHANGE THE READING OF THE BALANCE.

3.3 Full Auto-Calibration (for PXC-200)

According to the parameter setting table, set C1 to C1 — 0. Under full auto-calibration status, according to the changes of time and temperature the system will calibrate automatically.

NOTE: when there is an object on the pan, calibration cannot take place, information will be displayed to show you that you need to calibrate; when the object is removed from the pan.

4. PARAMETER SETTING

4.1 Backlight Setting

When the balance is on, press [SET] key twice to switch on backlight; if the light is already on, then after pressing [SET] key twice will turn the light off.

4.2 Weighing Units and Weighing Modes Convention

When the balance is on, press [MODE] key repeatedly, it displays the weighing units 'g', 'ct', 'lb', 'oz' and the weighing modes 'piece counting' and 'percentage

weighing' in turn.

4.3 Parameter setting

When the balance is on, press [SET] key, then press [PRINT] key, "Cx—y"will be displayed, x's values are 1-8, press [PRINT] key to view Cx's value; y is the value set by Cx, press [MODE] key to change the value of y, after the setting is done, press [TARE] key, "....." will be displayed. After about 2 seconds, the balance will save and upgrade the setting and then the balance is ready to be used.

4.4 Parameter

Cx	Cx—y	Meaning	
C1: Calibration mode	*C1—0	Auto-calibration with the built-in weight	
	C1—1	Manual calibration with external weight	
C2: Set the basic number of samples for Piece counting	*C2—0	10	
	C2—1	20	
	C2—2	50	
	C2—3	100	
	C2—4	1000	
C3: Zero Tracking "0" point minimum display value	C3—0	No "0" point tracking status	
	C3—1	1d	
	C3—2	2d	
	C3—3	3d	
	C3—4	4d	
	*C3—5	5d	
	C3—6	Not for user	
C4: Serial baud rate	*C4—0	2400bps	
	C4—1	1200bps	
	C4—2	4800bps	
	C4—3	9600bps	
*C5: Data output/print mode	C5—0	On zero stable	
	C5—1	On stable	
	*C5—2	On command	
	C5—3	Continuous	
C6: Key tone	*C6—0	No	(restart the balance by pressing [ON/OFF] key after setting)
	C6—1	Yes	

C7： Anti-interference Filtering	C7—0		
	*C7—1	Weak	
	C7—2	Medium	
	C7—3	Strong	
C8:With power screen will display	*C8—0	Yes	(restart the balance by re-plugging after setting)
	C8—1	No	

*is factory default setting

●**On zero stable output:** when 0.0000g is displayed, put object on the pan, after the value is stable, there will be a group of data transferred to an external device via the RS232 port

●**On stable output:** after the weight is stable, there will be a group of stable data transferred

●**On command output:** **[**PRINT] key, command P＜CR＞ ＜LF＞ data transferred through serial port, after the balance receiving command once, the current weighing data will be transferred

●**Continuous output:** the balance transfers weighing data every 0.3 second

4.5 Command Control

After the balance receiving the command, the command will be sent to external device, to inform external device that the balance will respond; if the command is wrong, “Err”will be sent to external device, it means that the balance has received an invalid command, valid commands are:

① O ＜CR＞ ＜LF＞ ON/OFF command is as the same as ON/OFF key on the balance（4F 0D 0A);

② T ＜CR＞ ＜LF＞ TARE command is as the same as [TARE] key on the balance（54 0D 0A）;

③ C ＜CR＞ ＜LF＞ CAL command is as the same as [CAL] key on the balance〈43 0D 0A〉;

④ M ＜CR＞ ＜LF＞ MODE command is as the same as [MODE] key on the balance（4D 0D 0A);

⑤ P ＜CR＞ ＜LF＞ PRINT command is as the same as [PRINT] key on the

balance（50 0D 0A）;

＜CR＞：ENTER（0D）

＜LF＞：LINEFEED（0A）

5. WEIGHING

5.1 Normal Weighing

(1). Plug in and pre-warm your balance at least 1 hour before weighing.

(2). Ensure the pan is empty, press [ON/OFF]key, 0.0000g will be displayed; after the auto calibration (PXC 200 model), 0.0000g will be displayed. For PX 200 model, press the [CAL] key and carefully apply the calibration weight provided.

(3). If you require to use other unit (ct, lb), or other weighing method, press [MODE] key to change displayed data to another unit or other weighing method.

(4) Open the door of weighing chamber, put the object on the centre of the pan, then close the door of weighing chamber, after the data is stable, record the data.

(5). Open the door of weighing chamber take the object out, carry on weighing; if you do not want to use the balance, close the door of weighing chamber to avoid dust getting inside the balance and to keep the air inside the balance chamber stable.

5.2 Weighing In a Container

(1). Put the container on the pan.

(2). Wait “O”—stable indicator displayed, then press [TARE] key to tare, 0.0000g will be displayed.

(3). Put the object in the container.

(4). Wait “O”—stable indicator displayed, then read the weight of object

5.3 Piece Counting

(1). Select a reference number of the samples according to PARAMETER SETTING (50 for example), and set the parameter setting to C2 parameter).

(2). press [TARE] key to tare, 0.0000g will be displayed after the balance is stable.

(3). Press [MODE] key to change the balance into piece counting status.

(4). Put the sample on the centre of the pan, then close the door of the weighing chamber. (If using a container, tare off the container first)

(5). Press [CAL] key, the balance will record the sample according to C2 parameter setting. (50 for example)

(6). After recording the sample, the balance will display the number in the sample according to C2 parameter setting, remove the sample, wait until the stable "O" is displayed, you may start the piece counting operation.

NOTE: The sample unit weight value should not be less than readability value.

5.4 Percentage Weighing

(1). Press [TARE] key, 0.0000g will be displayed after the balance is stable.

(2). Press [MODE] key to change the balance into Percentage weighing status

(3). Put the object on the centre of the pan, then close the door of weighing chamber.

(4). Press [CAL] key, the system records this sample as the object of reference (100.00%--basic value)

(5). After selecting the sample, 100.00% will be displayed. Remove the sample, wait until stable "O" displayed, you can now start the percentage weighing operation

NOTE: The sample value should not be less than readability value.

6. RS-232 INTERFACE

6.1 Transmission Form: asynchronous transmission

Baud rate: 1200, 2400, 4800, 9600

Start bit: 1

Stop bit: 1

Data bit: 8

Parity: none

6.2 Data Output Mode

See parameter setting table C5's information

6.3 Data Output Format:

FXXXX.XXXXKKK＜CR＞ ＜LF＞

F：sign bit “+” or “-”

X：0—9 weighing data

.：decimal point

K：reservation three sign of weighing unit, right align, if there is not three sign space will fill in the chamber

＜CR＞：ENTER

＜LF＞：LINE FEED

For example, if the value is +10.0000g, after the transmission it will be +0010.0000 g<CR><LF>

6.4 Stable Output or Unstable Output

When it is unstable output, KKK are space; When it is stable output, there will be information sent out.

6.5 Connection of Balance and External Device

balance 9 pins	computer 9 pins	balance 9 pins	series interface printer 25 pins
2	2	2	2
3	3	3	3
5	5	5	7

NOTE: the length of data line should not be more than 48 ft (15 meters).

7. CARE AND MAINTENANCE

• Do not use sharp or rough objects (such as a pen or knife etc.) to touch the keyboard; use your fingers only;
• Do not let any object fall on the pan, the weighing system will be damaged;
• Do not expose the balance to high temperature or to dusty environment;
• Do not disassemble the balance without permission, this will void the warranty. Also, the balance is supplied with 120 VAC power. DO NOT REMOVE ANY HOUSING WITHOUT DISCONNECTING FROM THE POWER SUPPLY;
• It is better to cover the balance with the supplied dust cover after use;
• Keep the balance clean and dry.

7-1 Cleaning

(1). Unplug the AC adapter before cleaning;
(2). Do not use any aggressive cleaning agent;
(3). Use a damp, soft, lint free cloth with some mild detergent such as soap;
(4). Make sure no liquid enters into the balance;
(5). After cleaning, wipe down the balance with a piece of lint free, soft, dry cloth.

8. TROUBLE SHOOTING

Problem	Possible Cause	Solution
Display is blank	• No power • The fuse is blown • There is a problem with the 120 VAC supply	• Plug in the AC/DC adapter • Replace the fuse, but you should find out why the fuse blew!! • Call a qualified electrician

Displayed value is unstable	• Bad working environment • The door of the chamber does not close properly • There is interference between the pan, pan support or dust guard and the balance housing • Unstable power supply The pan is overloaded • The object weighed is unstable (evaporation or absorption of moisture)	• Improve working conditions by avoiding vibration or drafts and make sure the balance is on a stable surface • Close the door properly • Remove the object and reseat the pan assembly to ensure no interference Connect an external AC main stabilizer Only weigh less than the capacity on the front of the balance Material which decreases or increases in weight will never give stable results
There is a large error between the actual value and displayed value	• The balance is not calibrated • The display is not tared before weighing • The balance is not properly leveled	• Calibrate the balance • Press TARE key to zero the display • Level the balance by turning the adjusting feet