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ES SERIES

ELECTRONIC LCD BALANCE

INSTRUCTION MANUAL

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Err 1 Sample being weighed exceeds the capacity of the balance. If error occurs when the sample is within the balance capacity, balance may be incorrectly calibrated.

Access to the Calibration menu can be disabled using the lock out Switch located on the right side of the balance.

- (1) Turn the balance off and unplug the power cord.
- (2) Locate the access hole on the right side of the balance where the switch is located and remove the plug from the hole.
- (3) Using a small screwdriver, slide the switch to the front of the balance for LOCKED or towards the rear of the balance for UNLOCKED.
- (4) Replace the plug in the access hole.

Plug in the power cord and turn on the balance.

10. CARE AND MAINTENANCE

To keep the balance operating properly, the housing and platform should be kept clean and free from foreign material. If necessary, a cloth dampened with a mild detergent may be used. Keep calibration masses in a safe dry place.

Unplug the AC Adapter when not in use. For long term storage, remove the batteries.

11 TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
No Display	Power Adapter not connected. Batteries are dead.	Connect power Adapter. Replace batteries
LO BAT Indicator	Batteries are weak	Replace batteries
Incorrect Weight Reading	Balance was not re-zeroed before weighing Balance has not been properly calibrated.	Press ON TARE with no weight on the platform, then weigh item.
Calibration Procedure does not work	Incorrect weights being Used	Use correct weights.
Unable to display Weight in a particular weighing unit	Weighing unit not Enabled in Setup menu.	Use Unit Selection submenu to set desired units ON (see Setup menu).
Balance won't store Selections made in Setup menu	END selection was not used to exit Setup menu.	You MUST use END to Exit Setup menu and Save selections.

12. Error Codes

The following list describes the various errors which can appear on the display and the suggested remedy.

Display Description

Err 0 With the platform on, this indicates the platform is too light, make it heavier properly. If this error still occurs, the sensor or the circuit board may be destroyed. The balance must be sent to the manufacturer to be serviced.

1. INTRODUCTION

This manual covers installation, operation and troubleshooting for the Portable Advanced Electronic Balances, models. ES-10, ES-20, ES-40,ES-50,ES-200(A),ES-300(A),ES-600(A),ES-1100,ES-2100(A), and ES-3000A,ES-5000A To ensure proper operation of the balance, please read this manual completely.

2. DESCRIPTION

The Portable Advanced balances are precision weighing instruments, designed to provide years of service with virtually no maintenance .The Portable Advanced housing is constructed of a material which is impact resistant. contains a one piece solid-state precision electronics PC board. and a five digit LCD display which is 0.5 inches in height. All Portable Advanced balances are initially factory set to measure in grams and can be set to measure in other units of measure as desired. Each balance operates through a series of menus which enable precise calibration and the selection of various parameters which enhance operation. A built in lock switch prevents calibration settings from being changed. Power is supplied through an AC adapter or batteries.

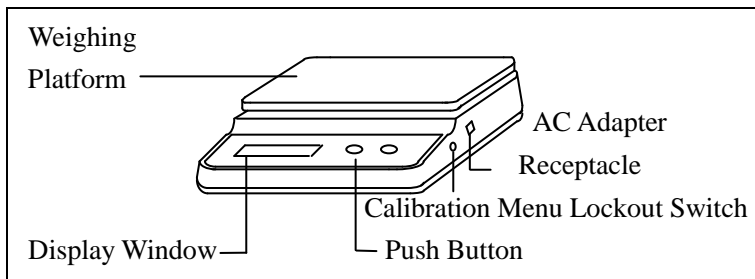
3. Portable Advanced balances contain two display menus which enable you to calibrate and configure the balance for specific operating requirements.

- CALIBRATION Menu–Allows the balance to be calibrated by using standard weights.
- SETUP Menu–allows the balance to be set for environmental conditions and customized for specific weighing functions.

When the balance is first turned on, it can be used to weigh tare items without setting the menus. Refer to the individual menus in this manual for detailed descriptions and procedures for programming.

4. UNPACKING

All Portable Advanced balances are supplied with a weighing platform, some of which have been installed, AC power adapter, instruction manual.



5. INSTALLATION

Environment

Balance performance can be affected by excessive air currents, corrosives, vibration, temperature or humidity extremes.

5.1 DO NOT use the balance:


- Next to open windows or doors causing drafts or rapid temperature changes.
- Near air conditioning or heat vents.
- Near vibrating, rotating or reciprocating equipment.
- On a non-level work surface.
- Near corrosive vapors (example : nitric acid).

5.2 Power Options

The balance can be operated using 4AA alkaline (not included), or from any AC electrical outlet using the AC adapter supplied.

5.3 Battery Installation




- (1) Turn the balance over.
- (2) Press the tabs on the battery cover inward and lift the cover off.
- (3) Remove the battery holder.

- (4) Press  to accept the displayed setting, when released, auto 0 will be displayed again.

8.8 Parts Counting Error Level

The parts counting error level is based on the resolution (readability) of the particular model balance and sample weight. The adjacent table lists error levels that you can choose from..

To view, change or disable the parts counting error level:




- (1) Access the PC Err submenu.
- (2) Press  to display the current setting.
- (3) Press  to change the setting.
- (4) Press  to accept the displayed setting, when released, PC

Err will be displayed again.

8.9 Auto Off


Auto Off permits the selection of either OFF, 60 seconds, 120 seconds or 180 seconds. When this function is selected, the balance will turn off if it is idle for the selected period of time (60, 120 or 180 seconds). This feature is especially useful when the balance is operated from internal batteries.

To view, change or disable the auto off feature:

- (1) Access the A. Off submenu.
- (2) Press  to display the current setting.
- (3) Press  to change the setting.
- (4) Press  to accept the displayed setting. When is released, A. Off will be displayed again.

8.10 END

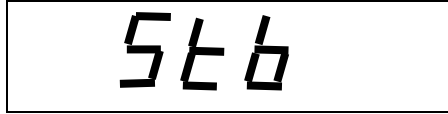
You must use End to exit the Setup menu. Changes you made in the Setup menu are only stored in memory if you use End.

To exit the Setup menu and store your settings, press  when END is displayed. When is released, the balance will be returned to normal weighing operations.




9. CALIBRATION LOCK-OUT PROTECTION

8.6 Stability Range

The stability range specifies how much a displayed weight may change while the stability indicator (unit indicator) remains ON. When displayed weight changes beyond the allowable range, the stability indicator turns OFF indicating an unstable condition. Portable advanced balances permit you to select one of four stability ranges (in divisions) as shown in the table.



To view or change the stability range:



- (1) Access the Stb submenu to display the current setting.
- (2) Press  to display the current setting.
- (3) Press  to change the setting.
- (4) Press  to accept the displayed setting, when released, Stb will be displayed again.

.5d	Smallest range: stability indicator is ON only when displayed weight is within .5 division.
1d	Normal range.
2d	Increased range.
5d	Largest range: stability indicator is ON with displayed weight changes Up to 5 division.

8.7 Auto-Zero

Auto-Zero minimizes the effects of temperature changes and shift on the zero reading. By defining a threshold level in divisions, the balance maintains the zero display until the threshold is exceeded. This submenu permits you to select one of three threshold levels, or turn the feature OFF. Auto-Zero only functions when the display reads zero.

To view or change the auto-zero setting:

- (1) Access the Auto 0 submenu.
- (2) Press  to display the current setting.
- (3) Press  to change the setting.


- (4) Install the 4AA alkaline battery in the battery holder, orienting the Plus (+) and minus (-) ends as indicated on the holder.
- (5) Replace the battery cover.

5.4 AC Adapter


Plug the jack from the adapter into the receptacle located on the right side of the balance. Plug the adapter into a 220v or 110v AC outlet.

6 OPERATION

6.1 Turning the Balance On and Off

When no load on the platform, press . The balance will display the software version, and then all segments will display will turn on, then the software version is displayed.

NOTE: Allow at least 5 minutes for the balance to temperature stabilize before using. If the balance is moved to a different temperature environment, allow additional time to stabilize.

To turn the balance off, press and hold  until OFF is displayed, then release it.



6.2 Checking Calibration


Before using the balance, its calibration should be checked. The balance has been calibrated before shipment, however, calibration is influenced by factors such as:

- (1) Variations in the earth gravitational field at different latitudes of the world.
- (2) Rough handling.
- (3) Changes in work location.
- (4) Height above sea level.

To check the balance's calibration, place a known mass on the center of the platform and read the displayed weight.

If the displayed weight differs from the known mass by more than acceptable limits, refer to the Calibration Menu and the Specifications at the rear of the manual.

6.3 Weighing



- (1) Press  to set the display to zero.
- (2) Place the object to be weighed on the platform.
- (3) Wait until the unit indicator appears before reading the displayed weight. When the unit indicator appears, the reading is stable.


6.4 Units exchange

Under weighing, press  to change the units.

6.5 Taring

When weighing samples that must be held in a container, taring enables the balance to subtract the weight of the container and display only the net weight of the sample.


- (1) Press  with no load on the platform to set the display to zero.
- (2) Place the empty container on the platform. Its weight will be displayed.
- (3) Press . Zero will be displayed and the container's weight will be stored in the balance's memory.
- (4) Add the sample to the container and read its net weight on the display.
- (5) When the container and its contents are removed, the container weight will be displayed as a negative number.


The tared weight will remain in memory until  is pressed again or the balance is turned off.


6.6 Parts Counting

Parts Counting must be enabled in the Setup menu before using This procedure. The balance will count parts based on the weight of a reference sample, 5, 10, 20, 30, 40 or 50 parts. For optimum results, the parts should be uniform in weight.

(1) Access the Sel submenu.

(2) Press , the display will show the grams unit indicator (g) along with the current status (ON/OFF).

(3) Press  to change the status.

(4) Press  to accept the displayed status, when released, the display will show the next unit indicator along with the current status.

(5) Set each unit or mode ON or OFF as in steps 3 and 4.

Display Indicator	Weighing units and Modes
g	grams
oz	ounces
ozt	troy ounces
dwt	pennyweight
lb	pounds
t	taels
ct	carat
pc	parts counting

8.5 Tael

If tael is enabled, you will be required to choose one of three different taels: Hong Kong, Singapore, or Taiwan.




(1) When the display shows



TAEL1, press  to change

to another tael if desired.

(2) Press  to accept the displayed tael.




Hong Kong





Taiwan

8.1 Accessing the Setup Menu

To access the Setup menu, press and hold  until **SETUP** is Displayed, then release.

8.2 To access a submenu :

- (1) Repeatedly press  until the desired submenu is displayed.
- (2) Press  to select the displayed submenu.



NOTE: You must use **END** to store any changes you make to the Setup menu.



The following sections describe each item on the Setup menu in detail.

SETUP MENU FACTORY SETTING	
Unit Selection	g
Stability	1 d
Auto Zero	. 5 d
PC Error Level	OFF
Auto Off	OFF


8.3 Reset to Factory Settings

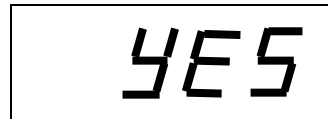
This submenu enables you to reset all Setup menu selections to the original factory setting outlined in the adjacent table.

To reset to factory settings:

- (1) Access the Reset submenu.
- (2) Press  to enter **RESET**.
- (3) Press  repeatedly to change the setting from **YES** to **NO**.



Selecting **YES** resets the Setup menu to the original factory setting.


- (4) Press  to accept the displayed setting.





8.4 Unit Selection

The Unit Selection submenu permits you to specify which weighing units and operating modes will be enabled for use during operation. The adjacent table lists the units and modes available on Portable Advanced balances.


- (1) Repeatedly press  until **pc CON** is displayed.
- (2) Place a container on the platform, then press . the balance displays **pcADD 5** which is the preset reference quantity. “5” shows the quantity of the reference sample.

- (3) To change the reference quantity, repeatedly press  until the desired quantity displayed.

Parts Counting Factory Settings	
Parts Counting Mode	Disabled
P C Err	OFF

NOTE: If you need to exit or restart parts counting at any time, press and hold  until **pc CON** is displayed, then release it. Return to step 2 to restart, or press  for other weighing functions.



- (4) Add the displayed number of parts to the container, then press . The balance will display the current number of parts.




NOTE: If **PCErr** is displayed, the sample is too small to provide accurate results within the selected parts counting error level (**PCErr** of the Setup menu).



- (5) Add parts to the container as desired and read the quantity on the display. At this time, only “**PC**” counting signal is displayed.

NOTE: The reference quantity will remain in memory until it is changed or balance is turned off.


- (6) To switch between viewing the quantity and weight of the parts, press .

7 USING MENUS TO CONFIGURE THE BALANCE

The following illustration identifies the items in each menu and The factory default settings are shown in bold type.

S E T U P


- **R E S E T**
Yes, No
- **S E L** (Unit selection)
g, oz, ozt, dwt, lb, t, ct, PC
- **S t b** (Stability)
.5d, 1d, 2d, 5d
- **A U t O 0** (Auto zero)
OFF, .5d, 1d, 3d
- **P C E r r** (Parts counting error level)
OFF, 1, 2, 5, 5
- **A . 0 F F** (Auto off)
OFF, 60, 120, 180
- **End**

To access a menu, press and hold  until desired menu appears, then release it.



Use these buttons to step through menus and select submenus:

-  next selection  select displayed item

7.1 Calibration Menu

All the Portable Advanced balances can be calibrated with standard masses. press and hold  with no load on the platform, until “CAL” is displayed, then



release it. Access “CAL” menu. Balance will first display “CAL”. In a few seconds, balance will display the calibration weight value, press  to choose the calibration weight value and press  to make sure. After that the balance will display the weight value, according to the shown weight value, put the corresponding calibrating weight on the center of the platform. In a few seconds, the display will stop, and meanwhile the calibration weight value will be shown, indicating that calibration is over. Normal weighting can be done.

7.2 Calibration Menu Lockout

(1) The Calibration menu may be locked out to prevent unauthorized access.

(2) When calibration end, turn the Lockout switch on the right side of the balance forwards, calibration menu may be stored in balance memory forever unless calibration menu is changed.

(3) When the Lockout switch is turned backwards, calibration menu cannot be stored in memory. It will disappear with no electricity.

7.3 . Calibration Masses

Before beginning calibration, make sure calibrated masses are on hand. If you begin calibration and realize masses are not available (masses are not accurate), either turn the balance off, or go through the procedure without masses. The balance will use previously stored calibration date. Calibration should be performed as necessary to ensure accurate weighing.

Required Calibration Masses	
Span Masses	
ES-10	10g
ES-20	10g or 20g
ES-40	20g or 40g
ES-50	20g or 50g
ES-200(A)	100g or 200g
ES-300(A)	100g or 300g
ES-600 (A)	200g or 500g
ES-1100(A)	1000g
ES-2100(A)	1000g or 2000g
ES-3000(A)	1000g or 3000g
ES-5000(A)	2000g or 5000g

8. SETUP MENU

The Setup menu is used to customize the operation of the balance for your specific requirements. It contains submenus which enable you to turn features on or off, and program balance parameters. The illustration below indicates in which submenus appear on the Setup menu.

S E T U P

- **R E S E T**
Yes, No
- **S E L** (Unit selection)
g, oz, ozt, dwt, lb, t, ct, PC
- **S t b** (Stability)
.5d, 1d, 2d, 5d
- **A U t O 0** (Auto zero)
OFF, .5d, 1d, 3d
- **P C E r r** (Parts counting error level)
OFF, 1, 2, 5, 5
- **A . 0 F F** (Auto off)
OFF, 60, 120, 180
- **End**