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INTRODUCTION

The ECS22D counting scale provides accurate, fast and versatile counting and check-weighing. The scale can be set to various units and counting modes.

The scale features a capacity of 10,000g / 22 lbs. It has an ABS weighing platform and base assembly. All the keypads are sealed, membrane switches and the display is a large easy to read 2 line dot matrix liquid crystal type (LCD).

Features include variable sample size, default sample size, pre-set weight, tare, pre-set weight, and an accumulation facility that allows the count to be stored and recalled as an accumulated total.

SPECIFICATIONS

Model #	ECS22Di
Maximum Capacity	22lb/10,000g
Readability	0.002lb / 1g
External Resolution	1:10,000
Internal Resolution	1:120,000
Tare range	22lb / 10kg
Minimum Capacity	2g
Repeatability (Std Dev)	0.002lb / 1g
Linearity ±	0.004lb / 2g
Units of Measure	Grams/Troy Pounds/Troy Ounces/Troy Pounds and Ounces/Drams/Pennyweight/Grain/Pounds/Ounces/Pounds and Ounces

Common Specifications

Interface	RS-232 Output (Select Endicia or UPS compatibility)
Stabilization Time	2 Seconds typical
Calibration	Automatic External
Display	2 Line Dot Matrix LCD digital display
Operating Temperature	0°C - 40°C 32°F - 104°F
Power supply	9Vdc, 100ma from external adapter
Balance Housing	ABS Plastic
Pan Size	145 x 190mm (5.7 x 7.5")
Overall Dimensions (W x D x H)	(265 x 200 x 80mm (10.4 x 7.9 x 3.1"))
Gross Weight	1.2kg/2.6lb
Applications	General Purpose Postal / Part Counting Scale
Functions	Weighing/part counting/accumulating memory/ preset weight
Other Features	Internal Batteries (6 X AA)

GENERAL INSTALLATION

- The scale should be sited in a location that will not degrade the accuracy.
- Avoid extremes of temperature. Do not place in direct sunlight or near air conditioning vents.
- Avoid unsuitable tables. The tables or floor must be rigid and not vibrate. Do not place near vibrating machinery.
- Avoid unstable power sources. Do not place near large users of electricity such as welding equipment or large motors.
- Avoid high humidity that might cause condensation. Avoid direct contact with water. Do not spray or immerse the scales in water.
- Avoid air movement such as from fans or opening doors. Do not place near open windows.
- Keep the scales clean.
- Do not stack material on the scales when they are not in use.

INSTALLATION OF ECS22Di SCALE

- The ECS22Di Scale comes with an ABS platform packed separately. Place the platform in the locating holes on the top cover. Do not press with excessive force as this could damage the load cell inside.
- Level the surface that the scale will be used on.
- Attach the power supply cable to the connector on the rear of the scale. Plug in the power supply module. The power switch is located on the scale keypad. (Optional – Install 6 AA Alkaline Batteries for portable use) If the scale will be used with a personal computer, use the supplied serial cable to connect to a 9 pin serial port on your personal computer.

KEYBOARD FUNCTIONS

- | | |
|---|--|
| • ON / OFF | Turn the scale on or off. |
| • TARE / AUTO-CAL | Set the weight or count to zero. Also used during automatic calibration. |
| • HOLD DISPLAY / SETUP | Hold the weight reading after an object has been removed from the scale. Also used to set interface output mode. |
| • TROY LB-OZ / GRAIN / 1 / INTERFACE • | Set the display to Troy LB-OZ with first touch, and then Grains with 2 nd touch. Enters the numeral ONE when setting sample size. |
| • GRAM / LB-OZ / 2 / AUTO-OFF++ • | Set the display to Gram with first touch, and then Pounds & Ounces with 2 nd touch. Enters the numeral TWO when setting sample size. Used to set Auto-off |
| • PENNY WT / DRAM / 5 / AUTO-OFF • | Set the display to Pennyweight with first touch, and then Dram with 2 nd touch. Enters the numeral FIVE when setting sample size. Used to set Auto-off. |
| • TROY LB / TROY OZ / 100 • | Set the display to Troy Pounds with first touch, and then Troy Ounces with 2 nd touch. Enters the numeral ONE HUNDRED when setting sample size. |

- **COUNT / 50** • Start Counting immediately using the most recent sampled weight. Enters the numeral FIFTY when setting sample size.
- **LB / OZ / 10** • Set the display to Pounds with first touch, and then Ounces with 2nd touch. Enters the numeral TEN when setting sample size.
- **PRE-SET** Set the weight for check-weighing.
- **M+** Add the current count to the accumulator.
- **MR** Recall the accumulator memory
- **VARIABLE SAMPLE** Set the number of items in a sample.
- **DEFAULT SAMPLE** Select default sample size. Also set default sample size
- **CE** Clear the unit weight or an erroneous entry. Return to weighing from counting.

Setup

To enter the setup mode, turn on the scale by pressing the on/off key. Then quickly while self test is being displayed press the Hold display / setup key. This will place the scale in the setup mode.

Interface Selection Endicia® / UPS Worldship®

While in the ECS22Di setup mode, press the “Troy lb-oz/grain” ‘1’ key. Then press “Troy lb-oz/grain” ‘1’ key again for Endicia Compatibility or “gram/lb-oz” ‘2’ key for UPS Compatibility. You may set UPS Worldship to any of the Toledo PS Series® settings, and the scale will be compatible with UPS Worldship

Auto-off Setup

While in the ECS22Di setup mode, press “gram/lb-oz” ‘2’ key. Current Auto-off time will display in the 2nd line of the LCD. To clear this time to zero press CE, to increase the time press M+ key. Increasing the auto-off time further beyond 30 minutes will set the scale NOT to auto off even in the battery operation. Once the desired auto-off time is displayed on the LCD, press HOLD Display/Setup key to store the new auto-off time.

Display Timing

While in the ECS22Di setup mode, press “Penny wt./dram” ‘5’ key. Then press “1” key to display only the stable weight on the platform or press “2” key to instantaneous display of the weight on the platform.

Note: Setting the display to stable weight display may slow the reaction time of the scale to the weight placed on the platform.

DISPLAY

The scale has a two line dot matrix digital display. The display shows weight, units, count, and instructions.

ZEROING THE DISPLAY

Press the **TARE** key at any time to set the zero point from which all other weighing and counting is measured. This will usually only be necessary when the platform is empty. Re-zero the scale if small amounts of weight are shown when the platform is empty.

TARRING

- Zero the scale by pressing the **TARE** key. If necessary, place a container on the platform, a value for its weight will be displayed.
- Press the **TARE** key to set the display to "0". The weight that was displayed is stored as the tare value and that value is subtracted from the display, leaving zero on the display.
- When the container is removed, a negative value will be shown. If the scale was tarred just before removing the container this value is the gross weight of the container plus all product that was removed.

SETTING THE WEIGHING UNITS

- The scale will turn on displaying pounds.
- To change the weighing unit, press the appropriate orange unit key. If the key has 2 weight units, press to cycle from one unit to another.

PART COUNTING

SETTING UNIT WEIGHT

In order to do parts counting it is necessary to know the average weight of the items to be counted. This can be done by weighing a known number of the items (SAMPLE) and letting the scale determine the average unit weight. It is important to set a large enough sample size so that the calculated unit weight is accurate.

This table gives the minimum recommended sample sizes. By using even larger sample sizes, the counting accuracy will be improved.

Item Weight	Minimum Recommended Sample Size
1g	50
3g	30
5g	20
10g & larger	15

WEIGHING A SAMPLE TO DETERMINE THE UNIT WEIGHT

- To determine the average weight of the items to be counted it will be necessary to place a known quantity of the items on the scale and then to key in the number of items being weighed. The scale will then divide the total weight by the number of items and display the average unit weight.
- Zero the scale by pressing the **TARE** key if necessary. If a container is to be used, place the container on the scale and tare as discussed earlier.

VARIABLE SAMPLE

- Press the VARIABLE SAMPLE key and then input the sample size by depressing the appropriate number keys (1, 2, 5, 10, 50, 100) until the sample size is indicated on the second line of the display. Each press of a numeric key adds that number to the sample size, thus, to set a sample

size of 18, press 10, 5, 2, 1. Pressing the CE key will reset the sample to "0", or, if the sample size is already set to "0", it will revert to the normal count mode.

- Once the correct sample size is displayed, press the Variable Sample key again and wait for the scale to request that weight be added.
- When the scale requests weight, Place the sample items on the scale. Once the scale has finished sampling the weight, the number of items will be displayed and the scale will be in counting mode.
- As more items are added to the scale, the quantity will increase.
- If the scale is not stable, the calculation will not be completed. If the weight is below zero, the "Count" display will show negative count.

DEFAULT SAMPLE

- Press the DEFAULT SAMPLE key.
- The default sample size will be displayed. If the default sample size needs to be changed, press the DEFAULT SAMPLE key repeatedly until the desired sample size is displayed. The sequence is 5, 10, 15, 20, 25, 30, 40, 50 items.
- When the scale requests weight, Place the sample items on the scale. Once the scale has finished sampling the weight, the number of items will be displayed and the scale will be in counting mode.
- As more items are added to the scale, the quantity will increase.
- If the scale is not stable, the calculation will not be completed. If the weight is below zero, the "Count" display will show negative count

COUNT

Depress the COUNT Key, and the scale will immediately begin counting using the sample weight that was last measured. The previous sample weight is retained even after the scale is powered down.

UNIT WEIGHT KEYS

The Unit weight keys are colored yellow/orange, and have a dual function. When the scale is in the weighing mode the key will change the scale to display in the units selected. When the key is depressed a second time, the second unit of weight will be used. If the scale is in counting mode, depressing a yellow unit weight key will return the scale to weighing mode with the selected unit.

WEIGHT PRE-SET OR CHECK-WEIGHING

Check-weighing (Weight Pre-Setting) will allow the scale to be used in filling packages in reference to a known weight.

Press the **PRE-SET** key and the scale will ask user to input the weight of a desired package. The user must input the weight in grams by pressing the number keys (1, 2, 5, 10, 50 & 100). Press **CE** key to cancel the input number which will set the input weight to 0. (Pressing the **CE** key when the input weight is already 0 will take the scale to the normal weighing **Gram** mode).

When the desired weight of a package is correctly displayed on the LCD, press the **PRE-SET** key to store the weight. "**Pack XXXg 0%**" will display on the first line of the LCD. XXXg is the weight entered by the user. As you add items or material to the platform, the % in respect to the reference weight will be displayed on the 1st line of the LCD and the progress bar in the 2nd line.

Exit the batching mode by pressing the **CE** key.

MANUALLY ACCUMULATED TOTAL

To obtain a more accurate count with a small sample size, count to a total no more than double the sample size and use the manual total. The scale can memorize the total number of items counted. In the counting mode, when the count number is being displayed, press the **M+** key, and the scale will add the quantity to the count already in the memory. The LCD will prompt "Memorizing count". Continue counting the items and adding the count to the memory. In this manner, the total count will be very accurate due to less error from internal round off.

To read the total number of items in the memory, simply press **MR** Key. Pressing **CE** key while the memory count is displayed (while in **MR** mode) will erase the count memory and reset it back to 0.

BATTERY OPERATION

The scales can be operated from 6 AA batteries if desired. When the AC adapter is installed, the scale is automatically powered by the adapter. The scale does not recharge the batteries, if rechargeable batteries are used, they must be recharged outside the scale.

RS-232 OUTPUT (*Endicia® Interface setup*)

While in *Endicia* interface mode, ECS22D scale's interface specification and data format are as follows:

Specifications:

- RS-232 output of weighing data
- ASCII code
- 2400 Baud
- 8 data bits
- No Parity
- 2 Stop bits

Data Format (Output in $XX_{lb} XX.X_{oz}$)

<STX><b0><80><80><Tenth of lb><Unit of lb><Tenth of oz><Unit of oz><1/10 of oz><CR>

When over load <b5>

When negative <b7>

RS-232 OUTPUT (*UPS Worldship® Interface setup*)

While in *UPS Worldship®* interface mode, ECS22D scale's interface specification and data format are as follows:

Specifications:

- RS-232 output of weighing data
- ASCII code
- 9600 Baud
- 7 data bits
- Parity = o
- 2 Stop bits

Data Format (Output in $XXX.XX_{lb}$)

<N><100th of lb><10th of lb><Unit of lb><P><1/10th of lb><1/100th of lb>
<S><U₁><U₂><S><M><M><S><S><CR><LF><EOT>

N = Space for positive, '-' for negative weights

P = Decimal point '.'

S = Space

U₁ = 'l'

U₂ = 'b'

M = 'G' when weight is stable and 'g' when weight is not stable

CALIBRATION

USER CALIBRATION

- Recalibration of the scale is not normally required, however, recalibration may be required if the load cell of the scale is overloaded due to dropping something heavy on the scale, dropping the scale or other kind of misuse. You must have or purchase a 2KG calibration weight before attempting to do a calibration.
- Plug in the adapter and Press **ON/OFF** key on the keyboard panel of the scale (*Make sure that there is no weight placed on the platform*). The LCD will first display “©Elane” and then “**Self-test...**” will be displayed. At this moment (when the Self-test... is being displayed on the LCD) press the **Tare/Autocal** key. Scale will enter the user calibration mode.
- The scale will ask for a 2kg weight. Put the 2kg weight on the platform and the scale will re-calibrate itself. Once the calibration is successful scale will ask to remove the weight from the platform.
- To exit the user calibration without completing, simply press **CE** key. **Note:** If the weight placed is not 2kg, the scale will not proceed and will keep on asking for the 2kg weight. The calibration procedure has to be carried out in an extremely calm and non vibrating environment.

ADVANCED CALIBRATION

If the scale load cell is overloaded too much during the course of use, and the scale cannot be calibrated using the normal technique, advanced calibration can be performed at **SCALES USA** for a nominal charge. This is not normally required. When the “Remove Weight or UNDERLOAD” message is displayed at scale startup and will not clear, advanced calibration may be required. Contact **SCALES USA** for assistance.

ERROR CODES

During the initial power-on testing or during operation it is possible the scale may show an error message. The meaning of the error messages is described below. If an error message is shown repeat the procedure that caused the message, turning the balance on, calibration or other functions. If the error message still is shown then contact **SCALES USA** for further support.

- **Overload!** Displays when the weight on the platform is more than the scale's maximum capacity.
- **Remove Weight** Displays when the scale is started in an uneven and vibrating surface/environment or with the weight placed on the platform or when the zero frequency is higher than the predefined range.
- **Underload!** Displays when zero range of the scale is lower than the predefined range.
- **Hold use wrong!** Displays if the **HOLD** key is pressed with the weight placed on the platform.

WARRANTY

This scale is warranted from all defects in materials or craftsmanship for a period of One Year from the date of purchase. Any defect created by misuse, abuse, overload or physical damage is not covered. All scales must be returned to our warranty department by the purchasing consumer

If your scale fails while under warranty, please send it to:

Scales USA Warranty Dept.
10306 E. Dunn Rd
Chattaroy, WA 99003

You must include a copy of your original receipt as proof of purchase and \$12.00 for return postage. The scale must be completely clean and devoid of foreign matter Unsanitary or unclean scales will be destroyed without repair.

CUSTOMER SUPPORT

Contact Support at www.scalesusa.com. Current phone numbers and addresses will be available as well as copies of manuals and other helpful information.