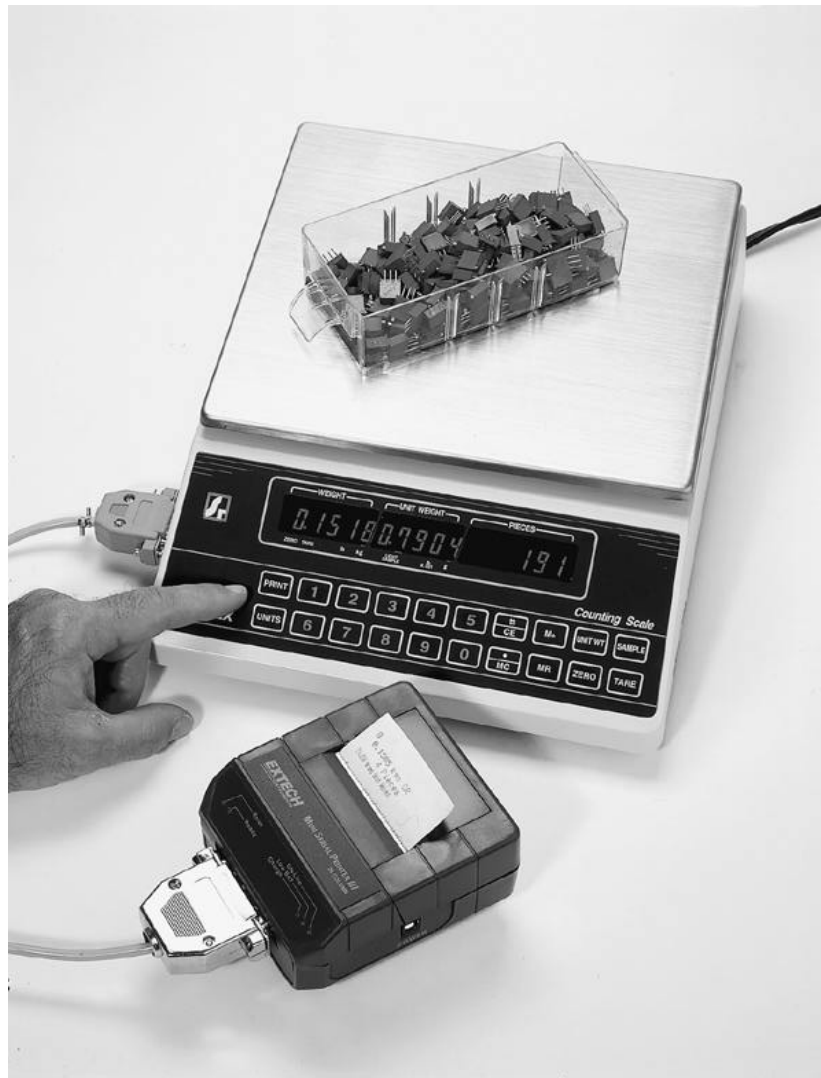


**MODELS 160252, 160255, 160257
COUNTING SCALES****1. INTRODUCTION**

Congratulations on your purchase of Extech's Electronic Counting Scale. These Scales provide COUNT, TOTAL, UNIT WEIGHT, and WEIGHT displays. Auto Zero and Tare are standard operating features and built-in printer interface via RS-232 communications provides hardcopy weight and count data.

2. SPECIFICATIONS

2.1 General Specifications

Measurement system	Strain gauge load cell
Display	7 segment, 16 digit vacuum fluorescent display
Sampling system	Known sample quantity and known unit weight entered via keypad
Overload display	Displays indicates dashes ' - - - - ' at 102% of capacity
Overload limit	300% of capacity maximum static overload
Zero adjust	Automatic zero via keypress
Zero tracking	Automatic zero tracking system
Count Accumulation	999,999 pieces maximum. 99,999 separate count operations
Measurement modes	COUNT, TOTAL, UNIT WEIGHT, and WEIGHT
Power Supply	117VAC $\pm$ 10%, 50/60Hz
Power consumption	Approx. 10 Watts
Printer Interface	Built-in RS-232 communications port for external for printer
Weight	Approx. 10 lbs. (4.6 kg)
Dimensions	9.5x12.3x3.1" (241x312x79mm); Platform: 8.7x8.3" (221x211mm)

2.2 Range Specifications

	160252	160255	160257
Capacity	4 lbs. (2kg)	10 lbs. (5kg)	20 lbs. (10kg)
Resolution	0.0005 lb. (0.0002kg)	0.001 lb. (0.0005kg)	0.002 lb. (0.001kg)
Sample Resolution	0.00004 lb. (20mg)	0.0001 lb. (50mg)	0.0002 lb. (100mg)
Min. sample weight	0.00008 lb. (40mg)	0.0002 lb. (100mg)	0.0004 lb. (200mg)
Accuracy	$\pm$ (0.01% full scale + 2 counts)		

3. PREPARATION FOR USE

3.1 Installation

Assembly instructions for scale platform are included with the assembly hardware kit packed with the scale. For best results operate the Counting Scale in an area free from particulates (especially iron), sunlight, vibration, high humidity, and temperature changes. Place scale on a firm, level table or floor.

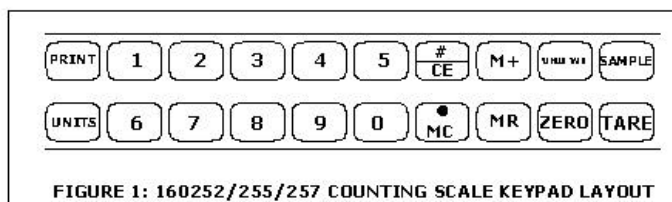
3.2 Getting Started

Plug the power cord into a 117VAC, 50/60Hz outlet. Power the scale by moving the POWER switch (located under the right side of scale) to the ON position. Allow the unit to warm up for at least 5 minutes.

3.3 Performance Test

Confirm that the display changes by applying weight to the platform. Verify that it returns to zero when the weight is removed.

3.4 Operating Keys



3.4.1 Numeric keys 0-9: The 10 numeric keys are used for data entry when changing the number of samples, entering the value of a known unit piece weight, or entering a known digital Tare value.

3.4.2 ZERO key: Press to zero the weight display up to 100% of scale capacity.

3.4.3 TARE key: Press to store the digital Tare value user-programmed via the numeric keys. Also, press to perform an Auto-Tare where the weight of an object currently on the scale becomes the digital Tare value.

3.4.4 SAMPLE key: Press to establish the current keyed in value as the piece-count of items currently on the scale's platform.

3.4.5 MR key: (Memory Recall). Press to access the Total Display mode. The left side of display indicates Total number of product count operations accumulated, while the right side shows the Total quantity of pieces accumulated. Press MR again to return to the normal display mode.

3.4.6 M+ key: (Memory Add). Press to add the displayed count to the accumulated total and to increment the Product Count Operations Accumulator.

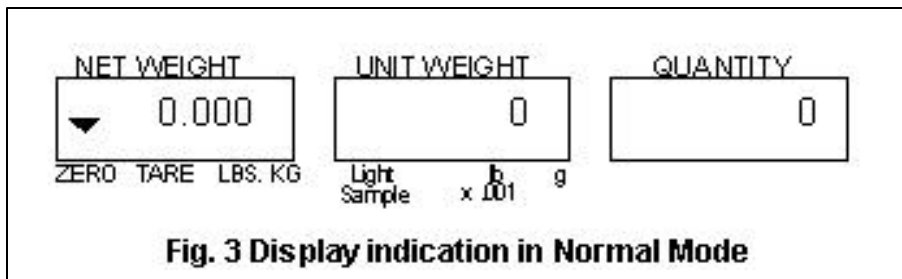
3.4.7 PRINT key: The PRINT key is used in conjunction with the built-in RS-232 Printer interface. Press to initiate a print job to an external printer.

3.4.8 UNITS key: Press to toggle the weight display units between lbs. and kgs. and the piece weight units between 0.001 lbs/piece and grams/piece.

3.4.9 # / CE key: Dual function key. If pressed while entering data, the display will clear (CE) to zero. Before data is entered this key puts the scale into data entry ready mode (#).

3.4.10 UNIT WT key: Press after programming a known unit piece weight to store the value in memory.

3.4.11 / MC key: Dual function key. During digital Tare or unit piece count data entry, press this key to correctly position the decimal point. In the MR (Memory Recall) mode this key resets the 'Number of Counts Accumulator' and the 'Total Number of Pieces Accumulator' to zero (MC for Memory Clear).



3.5 Display Modes

3.5.1 In the COUNTING mode, the 16 digit display simultaneously indicates NET WEIGHT, UNIT WEIGHT, and QUANTITY

3.5.2 In the TOTALS mode, the display simultaneously indicates the number of counting operations totaled and the accumulated total quantity.

3.5.3 Refer to Fig. 3 for normal mode display.

4. INDICATORS AND WARNINGS

The scale's keypad incorporates 'tactile feedback' meaning that when a key is pressed an audible tone is heard to confirm that a keypad command has been accepted. In addition, the following status indicators advise the operator:

4.1 ZERO Indicator: Indicates that the scale is within 1/4 of a graduation of zero.

4.2 TARE Indicator: Warns that a Tare value has been stored in memory.

4.3 lb. (Pounds) Indicator: Indicates that the lbs. mode of calibration has been selected.

4.4 kg. (Kilograms) Indicator: Indicates that the kg. mode of calibration has been selected.

4.5 Light Sample Indicator: Indicates that the unit piece weight is too light for accurate counting. This warning permits counting operations to continue however.

4.6 0.001lbs/PC (piece) Indicator: Indicates that the Unit Piece Weight display is calibrated to units of one-thousandths of a pound. To convert the units to pounds, simply shift the decimal point three places to the left.

4.7 g/PC (piece) Indicator: Indicates that the Unit Piece Weight display is calibrated to units of one gram.

5. COUNTING PROCEDURES

5.1 Counting pieces with a pre-counted sample

There are three operating modes available for counting pieces with a pre-counted sample:

Direct piece counting without a container 5.1.1

Piece counting with a container's weight stored as Tare value (Auto-Tare) 5.1.2

Piece counting with a container's weight zeroed 5.1.3

Note: In all modes, the sample number may be changed at anytime by entering the desired sample number using the Numeric keys and then pressing the SAMPLE key.

5.1.1 Counting pieces without a container

- a) Count out a number of pieces to make up a sample then place this sample on the weighing platform.
- b) If the weight display does not indicate zero, press the ZERO key.
- c) If the weight display indicates a Tare value, enter a Tare of zero by pressing the "0" Numeric key then the TARE key.
- d) Press SAMPLE and the display prompts with "SPLE. 20", where the number displayed is the last sample number entered.
- e) If the displayed sample number is incorrect, change the sample number via the Numeric keys 0 - 9 (maximum sample number is 99999). After the correct number is displayed, press the SAMPLE key to complete the process.

5.1.2 Counting pieces with the container weight stored as a Tare value (Auto-Tare)

Note: The pieces to be counted are placed in a container after the weight of the container is placed in tare memory.

- a) If the weight display does not indicate zero, press the ZERO key.
- b) Place the container on the weighing platform and press the TARE key to activate the Auto-Tare feature. The weight display will go to zero and the tare indicator will illuminate.
- c) Remove the container from the weighing platform. The weight display will indicate a negative tare value.
- d) Count out a number of pieces for a sample and place this sampling into the container.
- e) Place the container with the samples on the weighing platform.
- f) Press the SAMPLE key and observe that the display prompts with "SPLE= 20", where the number displayed is the last sample number entered.
- g) If the displayed number is not correct, change the sample number via the Numeric keys 0 - 9 (maximum sample number is 99999).
- h) Once the correct number is displayed, press the SAMPLE key to complete the process.

5.1.3 Counting pieces with the container weight zeroed

Note: The container weight is zeroed and left on the weighing platform. The pieces will be placed in the container as described in the procedure below.

- a) If the weight display is not zero, press the ZERO key. If the weight display is indicating a tare value, enter a Tare value of zero by pressing the "0" Numeric key and then the TARE key.
- b) Count out a number of pieces to make up a sample and put this sample into the container.
- c) If the displayed sample number is incorrect, change the sample number via the Numeric keys 0 - 9 (Sample number maximum is 99999).
- d) Once the correct number is displayed, press the SAMPLE key to complete the process.
- e) To re-zero the weight display, remove all weight from the weighing platform and press the ZERO key.

5.2 Counting pieces by entering a known piece weight

- a) Place the empty container on the weighing platform and press the TARE key. The weight display will zero and the TARE indicator will illuminate.
- b) Enter the known unit weight via the Numeric keys then press the UNIT WT key to store the value.
- c) Place the pieces to be counted into the container. The display will then indicate the net weight of the pieces, the entered unit piece weight value, and the total number of pieces in the container.

5.3 Counting pieces by entering a known Tare value

- a) If the weight display is not zero, press the Zero key. If the weight display is indicating a tare value, enter a tare of zero by pressing the "0" Numeric key and then the TARE key.
- b) Count out a number of pieces to make up a sample and put this sample on the weighing platform.
- c) Press the SAMPLE key. The display should prompt "SPLE= 20", where the number displayed is the last sample number entered.
- d) If the displayed sample number is incorrect, change the sample number via the Numeric keys 0 - 9 (maximum sample number is 99999).
- e) Once the correct number is displayed, press the SAMPLE key to complete the process.
- f) Remove the sample from the weighing platform and place the bulk container with the pieces to be counted onto the weighing platform. If the pieces used for the sample are to be included in the count be sure to place them in the container.
- g) Use the Numeric keys to enter known tare weight of a container

NOTE: The tare value entered must be in the same units as the displayed weight.

- h) The display will indicate the net weight, piece weight and count of the pieces in the container.
- i) To display the gross weight, enter a tare of zero by pressing the Numeric "0" key and then press Tare to store the zero tare value.
- j) The weight display will indicate the gross weight of the container and pieces.

5.4 Counting pieces entering both a known piece weight and a known Tare weight

- a) Place the container (filled with pieces to be counted) on the weighing platform.
- b) Enter the known Tare value and then press the TARE key. The weight display indicates net weight and the Tare indicator illuminates.
- c) Enter the known unit weight via the Numeric keys and press the UNIT WT key to store the value.
- d) The display will then indicate the net weight of the pieces, the entered unit place value, and the total number of pieces in the container.

6. OTHER KEYPAD FUNCTIONS

6.1 Accumulation

In this mode the displayed count is added to the accumulated total (provided the scale is balanced).

- a) Press the MR (memory recall) key to select the TOTALS DISPLAY mode and then press the MC (memory clear) key to ensure that the memory is cleared.
- b) With the pieces on the weighing platform and the display reading the piece count, press the M+ (memory add) key. A beep will sound, indicating the count has been added to the accumulating total. Any further operation of the M+ key will be ignored, indicated by three short beeps of the internal alarm.

- c) Remove the counted pieces and complete another count operation.
- d) Each piece count operation and subsequent M+ keypress will add a new count to the accumulating total.

IMPORTANT ACCUMULATOR NOTES:

The scale will not allow the operator to add a displayed count more than once into the accumulator. It requires the weight to be removed from the platform before another M+ (Memory Add) operation can be completed.

At any time the MR (Memory Recall) key may be pressed to enter the TOTALS DISPLAY mode (a "P" is then indicated in the left hand side of the display which also shows the number of COUNT operations for the pieces that have been accumulated). The right hand side of the display indicates the total number of pieces that have been accumulated. A second depression of the MR key returns the unit to the normal COUNT mode, enabling further counting operations to be completed and added to the accumulated total.

If the MC (clear memory) key is pressed while in the TOTALS DISPLAY mode, both the COUNT OPERATION accumulator and the TOTAL PIECE accumulator will be reset to ZERO.

7. DISPLAY MESSAGES

SPLE=	Sample mode. Appears in the weight display after the SAMPLE key has been pressed
P:	Appears when ACCUMULATED TOTAL DISPLAY mode is selected
- - - - -	Appears in the weight display if the capacity of the scale is exceeded (the quantity display will read "0").

8. RS232 PRINTING

After weighing and counting components, the scales's PC interface/Printer output allows the user to print the measurement/counting data to an external printer. The user can also send the data directly to a PC via the same interface. The technical specs for the interface are as follows:

Baud rate: 2400

Data bits: 8

Stop bits: 1

Parity: None

8.1 Connecting to a PC or Printer

The supplied DB-9 connector must be wired to a cable that is appropriate for the printer or PC that will be connected. The pin-out of the supplied connector is as follows:

Pins 1,3,4,6 - 9: NO CONNECTION

Pin 2: TXD (Transmit)

Pin 5: GND

8.2 Sample Printouts

ID 12345678912345 6.00 lbs. GR 60 Pieces 0.10003 lbs Unit Weight	ID 12345678912345 5.00 lbs GR 0.25 lbs TA 4.75 lbs NT 47 Pieces 0.10003 lbs Unit Weight
ID 12345678912345 10.00 lbs. GR 100 Pieces 0.10003 lbs Unit Weight	ID 12345678912345 9.00 lbs GR 0.25 lbs TA 8.75 lbs NT 87 Pieces 0.10003 lbs Unit Weight
ID 12345678912345 Number of Accumulations 2 Total 160	ID 12345678912345 Number of Accumulations Total 134

9. CALIBRATION / REPAIR SERVICES

Extech offers complete repair and calibration services for all of the products we sell. For periodic calibration, NIST certification or repair of any Extech product, call customer service for details on services available. Extech recommends that calibration be performed on an annual basis to insure calibration integrity.

10. WARRANTY

EXTECH INSTRUMENTS CORPORATION warrants this instrument to be free of defects in parts and workmanship for one year from date of shipment (a six month limited warranty applies on sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department at (781) 890-7440 for authorization. A Return Authorization (RA) number must be issued before any product is returned to Extech. The sender is responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit.

This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.

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