

# ROTEM®

Control & Management

## RPBS-1 Portable Scale



User Guide

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## **WARRANTY & LIMITATION OF LIABILITY**

1. ROTEM warrants that the product shall be free of defects in materials or workmanship and will conform to the technical specification for a period of 1 (one) year from the date of initial installation on site (the "warranty period").
2. Load cells are not covered by ROTEM's warranty.
3. ROTEM warrants that during said warranty period, any item/items or part/parts of equipment found defective with respect to materials or workmanship or which do not conform to the technical specification shall be repaired or replaced (at ROTEM's sole discretion), free of charge.
4. During the warranty period, in the event of an alleged defect, authorized resellers in relevant regions should be notified as soon as possible from the date of noticing the said defect, but no longer than thirty (30) days from such a discovery. The report shall include (1) a short description of the defects noticed (2) type of card / component and its matching serial number.
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**Document Version:** 2.0



Recycle raw materials instead of disposing as waste. The controller, accessories and packaging should be sorted for environmental-friendly recycling. The plastic components are labeled for categorized recycling.

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## Getting Started

Thank you for choosing ROTEM RPBS-1 portable scale. It is important to read the entire manual before initial use to avoid operational mistakes.

The RPBS-1 is a portable poultry scale system for weighing broilers and breeders. The RPBS-1 is easy to operate and user friendly. You can weigh birds individually, or by batch using the special curved metal hook. It is recommended to hang the RPBS-1 in a convenient place and height to perform the bird weighing process.

## Features

RPBS-1 features include:

- Average weight
- Multiple weights
- Data storage by farm, house, flock and day
- Standard deviation, C.V and uniformity
- Bird's age
- Bird classification by weight
- PC communication
- 10,000 weights memory
- Printer connection
- Stainless steel enclosure
- 10 kg (22 Lb.) or 30Kg (66Lb.) maximum load
- AC/DC power supply
- Battery backup
- Rechargeable batteries



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## Physical Attributes

The RPBS-1 interface is designed to be intuitive and easy to work with.

The following are included in this section:

- Exterior Features
- Faceplate Detail

### Exterior Features

The RPBS-1 scale exterior is detailed in Figure 1.



Figure 1: RPBS-1 Scale Exterior Features

## Faceplate Detail

The RPBS-1 scale faceplate is detailed in Figure 2.

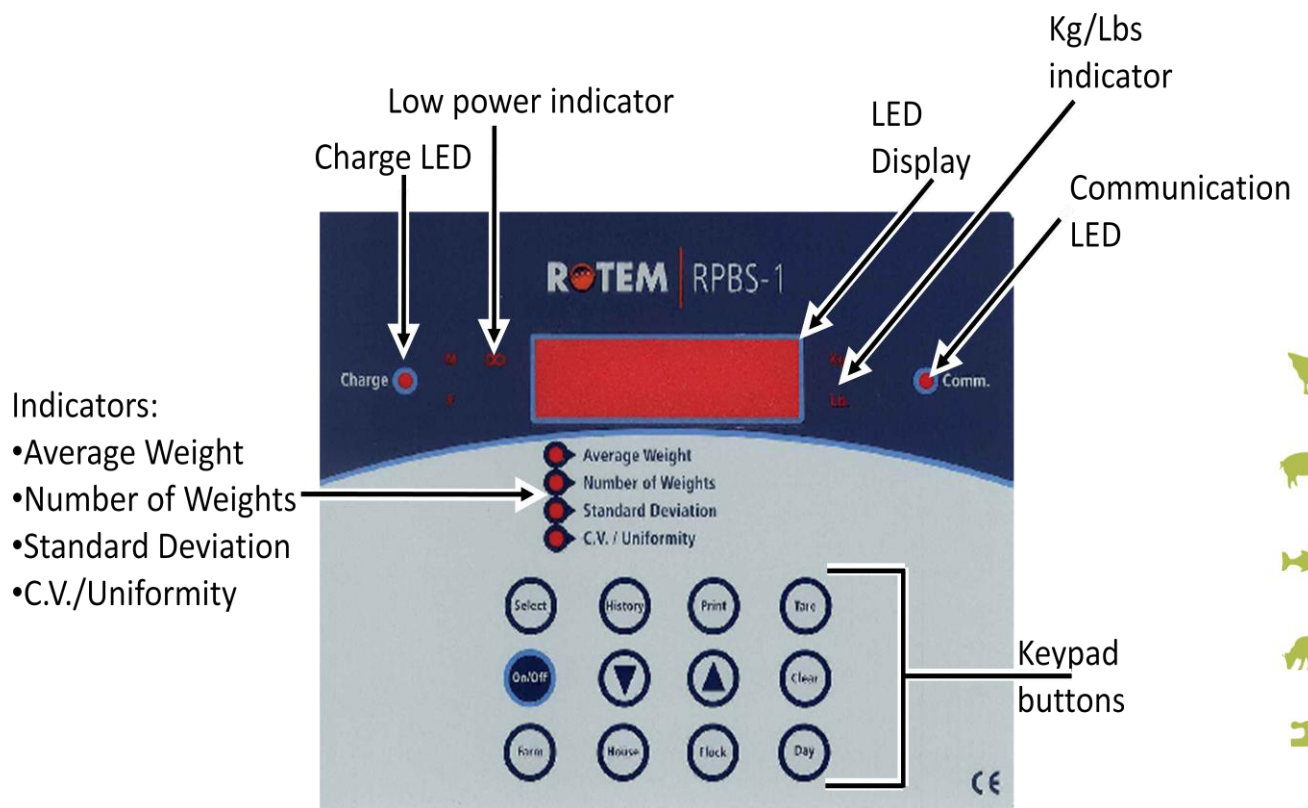


Figure 2: RPBS-1 Scale Faceplate Detail



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## Quick Guide

The RPBS-1 arrives fully calibrated and ready to work. In this quick guide section, we provide the necessary steps to begin weighing properly and easily from the first time.

The following are included in this section:

- Change Weighing Unit
- Initial Start
- Scale Calibration

## Change Weighing Unit

The RPBS-1 portable scale can be set for kilograms (kg) or pounds (lbs). The default setting is kg.

**To change the weighing units (kg>lbs):**

1. Enter the hidden parameters menu.

**NOTE:** To display the hidden parameters, the RPBS-1 must be on average weight display.

2. Press the **UP** and **DOWN** directional arrow buttons until the “0 <blink> -A-” message appears.
3. Use the **UP** and **DOWN** directional arrow buttons to select the desired weight unit. The desired weight unit is indicated to the right of the display.
4. Press the **SELECT** button several times to cycle through the hidden parameter options and exit the menu

## Initial Startup

Upon initial startup of the RPBS-1 it is important to perform a tare procedure and clear the device’s memory.

**To initially startup the RPBS-1:**

1. Position the RPBS-1 and connect the electrical connections.
2. Press the **ON/OFF** button. The message “PLEASE TARE” appears.
3. Press the **TARE** button. The message “TARE no” appears.
4. Hang a weighing basket on the bottom metal hook of the RPBS-1 and use the **UP** and **DOWN** arrow buttons to select “TARE YES”.
5. Press the **SELECT** button. The RPBS-1 performs the tare procedure.
6. Press the **CLEAR** button. The “CLEAR no” message appears.



7. Use the **UP** and **DOWN** arrow buttons to select the “CLEAR ALL” message and press the **SELECT** button. The message “SURE no” appears.
8. Select “CLEAR LAST” to clear only the last weight.
9. Use the **UP** and **DOWN** directional arrow buttons to select the “SURE YES” message and press the **SELECT** button.

NOTE: The RPBS-1 history is erased without calibration alteration.

10. To double-check the RPBS-1 calibration, place a known weight on the weighing basket and check the results.
11. When the unit is accurate, repeat Steps 7-9 to clear the weighing history.
12. To recalibrate the RPBS-1, see **Scale Calibration** on page 8.

NOTE: The RPBS-1 queries you to perform the tare procedure after every power on, 300 weights or changing a flock/house/farm.  
To **not** perform the tare procedure, take the first weight measurement without pressing on the **TARE** button and the message stops.

## Scale Calibration

This procedure should be performed only if the RPBS-1 does not display the correct weight of a known weight. Scale calibration should also be performed after every Cold Start.

### To calibrate the RPBS-1 scale:

1. Press the **UP** directional arrow and **TARE** buttons. The message “TARE/CALIB” appears.
2. Press the **SELECT** button. The RPBS-1 performs a tare procedure to prevent a negative calibration.
3. Place a known weight on the weight scale pan and use the **UP** and **DOWN** directional arrow buttons to set the weight for the known weight.
4. Press the **SELECT** button. The RPBS-1 performs a calibration and the message “GOOD Calibration” is displayed.
5. If the message “BAD Calibration” appears repeat Steps 1-4.
6. Press the **SELECT** button to exit.







## Operating Principles

This section helps you define the RPBS-1 to your own personal needs and illustrates more complex RPBS-1 features.

The following are discussed in this section:

- Farm, House, Flock, Day
- History
- Communication
- Print

### Farm, House, Flock, Day

You can use the RPBS-1 on a daily basis to manage your flock and easily view a sample of your bird's weight and receive an overall picture of the flock throughout the growth period.

The RPBS-1 is designed to gather weight from different farms/houses/flocks/days to avoid mixing information from one flock or growth day with another.

Before performing weights, check that you are gathering information for the correct farm/house/flock/day.

Program the RPBS-1 according to your farm's structure and make necessary changes daily.

Before adding new weight information, follow Steps 1-3 to enter the correct section and begin weighing.

#### To change Farm/House/Flock/Day:

1. Press either the **FARM**, **HOUSE**, **FLOCK** or **DAY** button. The selection and current farm/house/flock/day number appears.
2. To exit without changes, press the **SELECT** button.
3. When your selection appears, use the **UP** or **DOWN** directional arrows to change the selected value.
4. Press the **SELECT** button to set the selected changes.

## History

The RPBS-1 can gather and display bird historical data such as average weight, number of birds weighed, standard deviation, C.V. and uniformity.

Before viewing historical data, enter the farm, house and flock you wish to check according to the instructions above.

### To view historical data:

1. Press the **HISTORY** button. "HIS" is displayed and alternates with the growth day value.
2. Use the **UP** and **DOWN** directional arrow buttons to navigate through growth days.
3. Use the **SELECT** button to switch between average weights, number of weights, standard deviation and C.V. information for the selected day.
4. To exit, press the **HISTORY** button and "-ESC-" appears.

## Communication

The RPBS-1 can be connected to a computer and be controlled via RPBS-1 communication program. The ROTEM RPBS-1 communication program is an easy to operate MS Windows based environment program and required for this connection.

This software is sold separately (part number: A-RPBS1-COM) and contains a software CD and communication cable for proper connection. The software has many advantages such as:

- History collection
- Easy management
- Graphic display options.
- Easy to print information
- Comparison options
- Additional RPBS-1 features available
- Export, view and process data through MS Excel



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## Print

The RPBS-1 can connect and print reports directly from a special serial printer available from your dealer. You can select from the following for printed reports:

- Day
- Flock
- House
- Farm
- All

### To print data reports:

1. Press the **PRINT** button. "PRINT no" is displayed.
2. Use the **UP** directional arrow button to change the print mode to "DAY".
3. Press the **SELECT** button to print all information for the present day.
4. Press the **UP** directional arrow button and "FLOCK" is displayed.
5. Press the **SELECT** button to print all information for the current flock.
6. Press the **UP** directional arrow button and "HOUSE" is displayed.
7. Press the **SELECT** button to print all information for the current house.
8. Press the **UP** directional arrow button and "FARM" is displayed.
9. Press the **SELECT** button to print all information for the current farm.
10. Press the **UP** directional arrow button and "ALL" is displayed.
11. Press the **SELECT** button to print all information in the RPBS-1 memory.
12. To cancel the print job at any point, press the **SELECT** button for several seconds.

## General Features

The following are included in this section:

- Setting Up Bird Classification
- A/D Count Test

## Setting Up Bird Classification

This feature enables you to manage flock weight and provides an overall flock view.

The RPBS-1 can automatically classify bird weights in to four user-defined groups.

**To create deferent groups follow the next easy instructions:**

1. Simultaneously press the **UP** directional arrow and **HISTORY** buttons. The message “CLASS no” appears on the display.
2. Use the **UP** and **DOWN** directional arrow buttons to select the message “CLASS YES”, and press the **SELECT** button. The number “-1-” (indicating Class 1) alternating with a weight value is displayed.
3. Press the **UP** and **DOWN** directional arrow buttons to change the weight range. This sets the low limit of the first class value.
4. Press the **SELECT** button to enter Class 2 and use the **UP** and **DOWN** directional arrow buttons to change the weight range and set the low limit for Class 2. The low value of this class is the upper value of Class 1.
5. Repeat Step 1 through Step 5 to adjust Class 3 and Class 4.

**To exit bird classification mode:**

- Repeat Steps 1-2 above and select “CLASS no” in Step 2.

After creating different classes, the RPBS-1 automatically sorts weights according to their proper classes. The main display indicates the group number instead of weight.

**To view the number of weight per class:**

- Browse by pressing the **SELECT** button to the number of weights and use the **UP** and **DOWN** direction arrow to leaf through classes.

You can view the same information through the printer output or connected computer.

**NOTE:** If Class 1’s low limit is set higher than 0, some weights that are lighter than the low user-determined limit do not belong in any group or are not considered.





## A/D Count Test

The RPBS-1 can display A/D counts on the main screen.

### To display A/D count:

1. Press the **UP** directional button and the **CLEAR** button simultaneously.
2. Place a weight in the weight pan and notice if the A/D count changes. If the A/D count does not change, restart the system and repeat Step 1 and Step 2. If the problem persists contact your local dealer for assistance.
3. Press the **SELECT** button to exit.

## Hidden Parameters

The RPBS-1 has hidden parameters for weight calculations and measurements that are generally set and not routinely adjusted. These parameters have a different access format to protect them from being accidentally altered.

The following are included in this section:

- Hidden Parameters
- Accessing Hidden Parameters


## Hidden Parameters Description

The following are descriptions of RPBS-1 hidden parameters:

- Weight unit of measure.** Displays the weight units in kilograms (Kg) and or pounds (Lb). Select from 0 for kg, 1 for lbs. Default value is 0.
- Scale calibration number.** After calibration, the RPBS-1 provides a calibration number that overwrites the default value. Note the number and use it instead of calibration after a cold start. Default value is 6500.
- Number of individuals per weighing (1-10).** To weigh more than one bird at a time, change this value and the RPBS-1 calculates the individual weight of each bird. Default value is 1.
- Scale sensitivity (expressed in percent).** The RPBS-1 sensitivity value is a tolerance percent above and below A/D count average to perform the weighing. When set at a low percentage setting, shifting and strong movement prevents accurate weighing. The RPBS-1 performs the weighing only after stabilization and halt in bird movement more than the set percent above and below. A low percent setting results in higher weight accuracy and slower operation. Higher values indicate less accuracy and quicker weighing. Default value is 2.
- Uniformity percentage range.** Default value is 10%. Alter the range (in percent) for calculating uniformity according to this formula:

$$\text{Uniformity} = \frac{\text{number of bird weights within } \pm 10\% \text{ (to } 30\%) \text{ of average}}{\text{Number of weights}} \times 100$$





## Accessing Hidden Parameters

NOTE: To display the hidden parameters, the RPBS-1 must be on average weight display.

### To enter the hidden parameters menu:

1. Press the **UP** and **DOWN** directional arrow buttons simultaneously until a blinking “-A->0” message is displayed. This indicates parameter A, weight unit.
2. Press the **UP** directional arrow key to select pounds (Lb), press the **DOWN** directional key to select kilograms (Kg).
3. Press the **SELECT** key several times to cycle through the hidden parameters and exit the hidden parameters menu.



## Maintenance

The RPBS-1 has minor maintenance requirements, mostly concerned with DC current, factory default settings, and peripheral connections.

The following are included in this section:

- Charging the RPBS-1
- Factory Default Settings
- Replacement Part List

## Charging the RPBS-1

The RPBS-1 unit is operates with NiMH batteries in configuration of 2.4V 2300 mAH. Contact your local dealer for replacement battery package if needed (part number SP-RPBS1-BAT).

Initial use: Charge the device for 14 hours DC using the supplied charger.

Low battery unit should be charged for 14 hours using the supplied charger.

When the low battery led blinks the scale has reserve power for 30 minutes and then turns off until recharged or batteries replaced.

## Factory Default Settings

Perform a Cold Start to reset the RPBS-1 to the factory default settings. Perform a **Scale Calibration** after a Cold Start. Refer to Page 8.

**To perform a Cold Start: (or after changing EPROM):**

1. Turn off the RPBS-1.
2. Press and simultaneously hold down the **HISTORY**, **PRINT** and **TARE** buttons and turn the RPBS-1 on.
3. Release the buttons when the term COLD is displayed. The RPBS-1 is reset to the factory default settings.



## Replacement Part List

RPBS-1 replacement parts are listed in Table 1.

*Table 1: RPBS-1 Replacement Parts*

Part Number	Description
C-RPBS1	RPBS-1 card
C-RPBS1-BC-V1	RPBS-1 battery charger 115V
C-RPBS1-BC-V2	RPBS-1 battery charger 230V
C-RPBS1-CASE	RPBS-1 case
C-RPBS1-CC	RPBS-1 car charger cable
C-RPBS1-COM	RPBS-1 communication package
C-RPBS1-PC	RPBS-1 printer cable
SP-RPBS1-10K	RPBS-1 load cell 10 kg
SP-RPBS1-30K	RPBS-1 load cell 30 kg
SP-RPBS1-BAT	RPBS-1 battery case

## Concepts

The following concepts are included in this section:

- Standard Deviation
- Coefficient of Variation
- Uniformity (Homogeneity or Evenness)

## Standard Deviation

The standard deviation is kind of "mean of the mean," and often can assist you in interpreting flock data. A "normal" distribution of data means that most of the weights in a set of data are close to the "average," while relatively few examples tend to one extreme or the other.

Normal data distributed on a graph appears as in Figure 3.

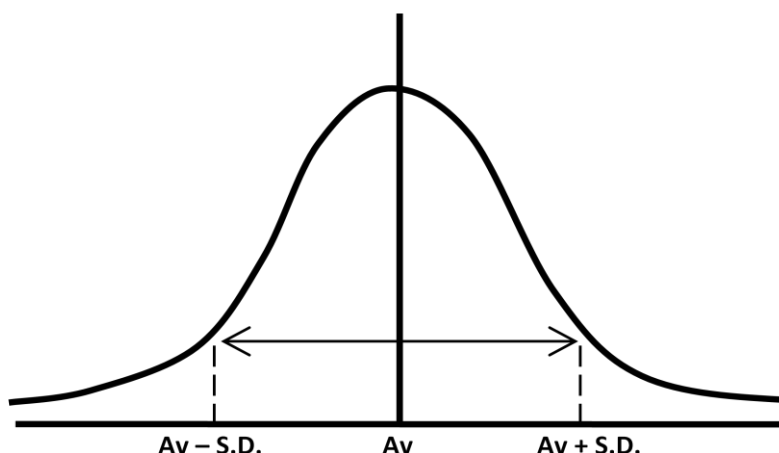


Figure 3: Normal Standard Deviation Bell Curve

X-Axis	Bird weight.
Y-Axis	The number of weights for each value on the X-Axis.

Standard Deviation states:

$$\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

$\sigma$  = Standard Deviation

$\sum$  : Sum of the square ( X (weights) – Average weight)

$\bar{x}$  : Average Weight

Where  $n$  – Number of weights

General rule: **The smaller number the value in standard deviation indicates a more uniform flock.**



## Coefficient of Variation

The CV value is obtained by expressing the standard deviation as a percentage of the average weight. This value describes the variation among the recorded body weights in a single value.

The coefficient of variation (CV) percentage is calculated by the following formula:

$$CV = \frac{\text{standard deviation}}{\text{average}} \times 100$$

## Uniformity (Homogeneity or Evenness)

The Uniformity value is obtained by counting birds with body weight, within a range of either  $\pm 10\%$  or  $\pm 15\%$  of the average body weight. The number of birds in this range is expressed as a percentage of the total number of weights. In Europe most managers use the  $\pm 10\%$  range but the fact that different ranges are used does sometimes cause confusion. This method of describing a variation is easy to practice but it does not accurately account for all variations the way that CV does.

The formula for Uniformity is calculated by the following formula:

$$\text{Uniformity} = \frac{\text{number of birds within } \pm 10\% \text{ of average}}{\text{number of weights}} \times 100$$