

RPBS

Remote Scale

Manual for use and maintenance



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 **Munters**

RBBS

Manual for use and maintenance

Original instructions

This manual for use and maintenance is an integral part of the apparatus together with the attached technical documentation.

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1 Introduction

1.1 Disclaimer

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1.2 Introduction

Congratulations on your excellent choice of purchasing RPBS!

In order to realize the full benefit from this product it is important that it is installed, commissioned and operated correctly. Before installation or using the fan, this manual should be studied carefully. It is also recommended that it is kept safely for future reference. The manual is intended as a reference for installation, commissioning and day-to-day operation of the Munters Controllers.

1.3 Notes

Date of release: July 2010

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2 Precautions

2.1 Grounding

- Keep the controller as far as possible from heavy contactor boxes and other sources of electrical interference.
- Do not connect communication wire shields, which go from one house to another at both ends. Connect them at one end only. Connection at both ends can cause ground loop currents to flow, which reduce reliability.

2.2 Checking the Battery Level

- Check the battery once a year. The output must be 2.7 volts (minimum). Authorized personnel only must replace the battery if the output is below the minimum required level or every five years.

3 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.

3.1 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

3.2 Physical Attributes

The RPBS-1 interface is designed to be intuitive and simple to use.

Figure 1 details The RPBS-1 scale exterior.



Figure 1: RPBS-1 Scale Exterior Features

3.3 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 sections include:

- Change Weighing Unit
- Initial Start
- Scale Calibration

3.3.1 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

3.3.2 INITIAL STARTUP

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

To tare the RPBS-1:

1. Position the RPBS-1 and connect the electrical connections.
2. Press **ON/OFF**. The message "PLEASE TARE" appears.
3. Press **TARE**. 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 **SELECT**. The RPBS-1 performs the tare procedure.
6. Press **CLEAR**. The "CLEAR no" message appears.
7. Press the **UP** and **DOWN** arrows to select the "CLEAR ALL" message and press **SELECT**. The message "SURE no" appears.
8. Select "CLEAR LAST" to clear only the last weight.
9. Press the **UP** and **DOWN** directional arrows to select the "SURE YES" message and press **SELECT**.

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 9.

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.

3.3.3 SCALE CALIBRATION

- Calibrate the scale only if the RPBS-1 does not display the correct weight of a known weight.
- Always calibrate the scaled after a Cold Start.

To calibrate the RPBS-1 scale:

1. Simultaneously, press the **UP** arrow and **TARE**. The message "TARE/CALIB" appears.
2. Press **SELECT**. 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** arrows to set the weight for the known weight.
4. Press **SELECT**. The RPBS-1 performs a calibration and the message "GOOD Calibration" appears.
5. If the message "BAD Calibration" appears repeat Steps 1 - 4.
6. Press **SELECT** to exit.

4 Operating Principles

This section:

- details how to define the RPBS-1 to meet your requirements
- illustrates more complex RPBS-1 features.

The following are discussed in this section:

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

4.1 Farm, House, Flock, Day

You can use the RPBS-1 daily to easily view a sample of your birds' 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 while avoiding mixing information from one flock or growth day with another.

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

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

4.3 Communication

The RPBS-1 can be connected to a computer and be controlled via the 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

4.4 Print

The RPBS-1 can connect and print reports directly from a special serial printer available from your dealer.

To print data reports:

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

5 General Features

The following section details:

- Setting Up Bird Classification
- A/D Count Test

5.1 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 different groups follow the next easy instructions:

1. Simultaneously press the **UP** directional arrow and **HISTORY**. The message “CLASS no” appears on the display.
2. Use the **UP** and **DOWN** directional arrows to select the message “CLASS YES”, and press **SELECT**. The number “-1-” (indicating Class 1) alternating with a weight value is displayed.
3. Press the **UP** and **DOWN** directional arrows to change the weight range. This sets the low limit of the first class value.
4. Press **SELECT** to enter Class 2 and use the **UP** and **DOWN** directional arrows 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 - 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 **SELECT** to the number of weights and use the **UP** and **DOWN** direction arrows to leaf through classes.

NOTE 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, the RPBS does not collect data of weights that are less than the low user-determined limit.

5.2 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 arrow and the **CLEAR** 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 **SELECT** to exit.

6 Hidden Parameters

The following are included in this section:

- Hidden Parameters
- Accessing Hidden Parameters

6.1 Hidden Parameters Description

The following descriptions detail the RPBS-1's 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:

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

6.2 Accessing Hidden Parameters

The RPBS-1 has hidden parameters which have a different access format to protect them from being accidentally altered. 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 simultaneously until a blinking “-A->0” message is displayed. This indicates parameter A, the weight unit.
2. Press the **UP** directional arrow to select pounds (Lb), press the **DOWN** directional arrow to select kilograms (Kg).
3. Press **SELECT** several times to cycle through the hidden parameters and exit the hidden parameters menu.

7 Maintenance

The following are included in this section:

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

7.1 Charging the RPBS-1

The RPBS-1 unit operates with NiMH batteries in configuration of 2.4V 2300 mAH. Contact your local dealer for replacement battery package if needed (P/N: 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.

7.2 Factory Default Settings

Perform a Cold Start to reset the RPBS-1 to the factory default settings. Perform **Scale Calibration** after a Cold Start. Refer to Page 9.

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

1. Turn off the RPBS-1.
2. Press and simultaneously hold down **HISTORY**, **PRINT** and **TARE** 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.

7.3 Replacement Part List

Table 1 list the RPBS-1 replacement parts.

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

Part Number	Description
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

8 Concepts

The following concepts are included in this section:

- Standard Deviation
- Uniformity (Homogeneity or Evenness)

8.1 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.

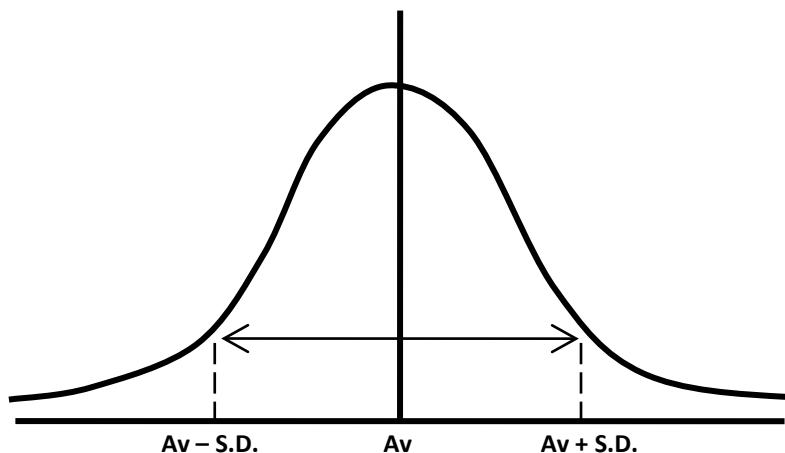


Figure 2: Normal Standard Deviation Bell Curve

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

Standard Deviation states:

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

σ = 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.

8.2 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 using the following formula:

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

8.3 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 using the following formula:

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

9 Warranty

Warranty and technical assistance

Munters products are designed and built to provide reliable and satisfactory performance but cannot be guaranteed free of faults; although they are reliable products they can develop unforeseenable defects and the user must take this into account and arrange adequate emergency or alarm systems if failure to operate could cause damage to the articles for which the Munters plant was required: if this is not done, the user is fully responsible for the damage which they could suffer.

Munters extends this limited warranty to the first purchaser and guarantees its products to be free from defects originating in manufacture or materials for one year from the date of delivery, provided that suitable transport, storage, installation and maintenance terms are complied with. The warranty does not apply if the products have been repaired without express authorisation from Munters, or repaired in such a way that, in Munters' judgement, their performance and reliability have been impaired, or incorrectly installed, or subjected to improper use. The user accepts total responsibility for incorrect use of the products.

The warranty on products from outside suppliers fitted to RPBS, (for example antennas, power supplies, cables, etc.) is limited to the conditions stated by the supplier: all claims must be made in writing within eight days of the discovery of the defect and within 12 months of the delivery of the defective product. Munters has thirty days from the date of receipt in which to take action, and has the right to examine the product at the customer's premises or at its own plant (carriage cost to be borne by the customer).

Munters at its sole discretion has the option of replacing or repairing, free of charge, products which it considers defective, and will arrange for their despatch back to the customer carriage paid. In the case of faulty parts of small commercial value which are widely available (such as bolts, etc.) for urgent despatch, where the cost of carriage would exceed the value of the parts, Munters may authorise the customer exclusively to purchase the replacement parts locally; Munters will reimburse the value of the product at its cost price.

Munters will not be liable for costs incurred in demounting the defective part, or the time required to travel to site and the associated travel costs. No agent, employee or dealer is authorised to give any further guarantees or to accept any other liability on Munters' behalf in connection with other Munters products, except in writing with the signature of one of the Company's Managers.

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The liability of the manufacturer Munters ceases in the event of:

- dismantling the safety devices;
- use of unauthorised materials;
- inadequate maintenance;
- use of non-original spare parts and accessories.

Barring specific contractual terms, the following are directly at the user's expense:

- preparing installation sites;
- providing an electricity supply (including the protective equipotential bonding (PE) conductor, in accordance with CEI EN 60204-1, paragraph 8.2), for correctly connecting the equipment to the mains electricity supply;
- providing ancillary services appropriate to the requirements of the plant on the basis of the information supplied with regard to installation;
- tools and consumables required for fitting and installation;
- lubricants necessary for commissioning and maintenance.

It is mandatory to purchase and use only original spare parts or those recommended by the manufacturer.

Dismantling and assembly must be performed by qualified technicians and according to the manufacturer's instructions.

The use of non-original spare parts or incorrect assembly exonerates the manufacturer from all liability.

Requests for technical assistance and spare parts can be made directly to the nearest Munters office. A full list of contact details can be found on the back page of this manual.

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