

RSC-2SE

# Manual for use and maintenance



## RSC-2SE Ver 7.1

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**Product Software:** 7.1

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 an RSC-2SE!

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 unit, this manual should be studied carefully. It is also recommended that it be 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

Munters cannot guarantee to inform users about the changes or to distribute new manuals to them.

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# 2 RSC-2SE

Munters' RSC-2SE weighs chickens and turkeys on one or two platforms. The RSC-2SE weighs the birds automatically as they mount the platform within their living area.

- Key Features
- Operating Principles
- Control Panel

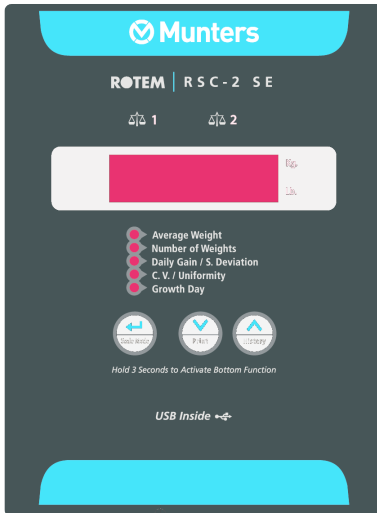
## 2.1 Key Features

- Weighing range according to the Installed Platform
- Precision per weighing:  $\pm 0.2\%$
- Up to two platforms
- Up to one year data collection
- Up to 100 meter (300 feet) cable
- Minimum Weighing Time: 2 to 3 seconds
- Battery backup
- Automatic update of average
- Standard deviation, daily gain, CV, uniformity
- Standard remote communications
- Weight histograms are available with communications
- Software version 7.1 supports RotemNet.

## 2.2 Operating Principles

- A simple menu and three user-friendly keys provide user access.
- Two indicator lights to identify the active platform.
- The RSC-2SE senses the change in weight when birds mount and dismount the platform. Changes within the acceptable range register as valid bird weights.
- Accumulations of debris taken out automatically.
- Multiple birds automatically register correctly as long as there is a small interval between them as they mount.
- The RSC-2SE automatically follows the birds as they grow, and updates its reference data regularly.

## 2.3 Control Panel



- **Scale Indicator Lights:** Identify the current platform. Values in the display pertaining to this platform.
- **Display:** Shows the current value. In some cases it shows an abbreviation describing the current value alternately with the value. To the right of the display are Lb (pound) and Kg (kilogram) indicators.
- **Menu:** The first menu item is Average Weight. When the indicator by this item is lit, the display shows the average weight for the indicated scale platform.
- **Keypads:** The 'Select' key navigates from item to item in the Menu. After you reach Growth Day it cycles back to Average Weight.

NOTE You can edit the **Growth Day** with the Arrow keys. If you set the growth day to zero, the display flashes **CLEAR**; if you press the **Select** key at this point, the RSC-2SE resets to growth day 1 and erases data it has collected. If you change growth days, new data mixes with previously saved data.

- **Advanced Functions:** Refer to Functions for additional features.

# 3 Installation

The following sections describe how to install the RSC-2SE hardware and software.

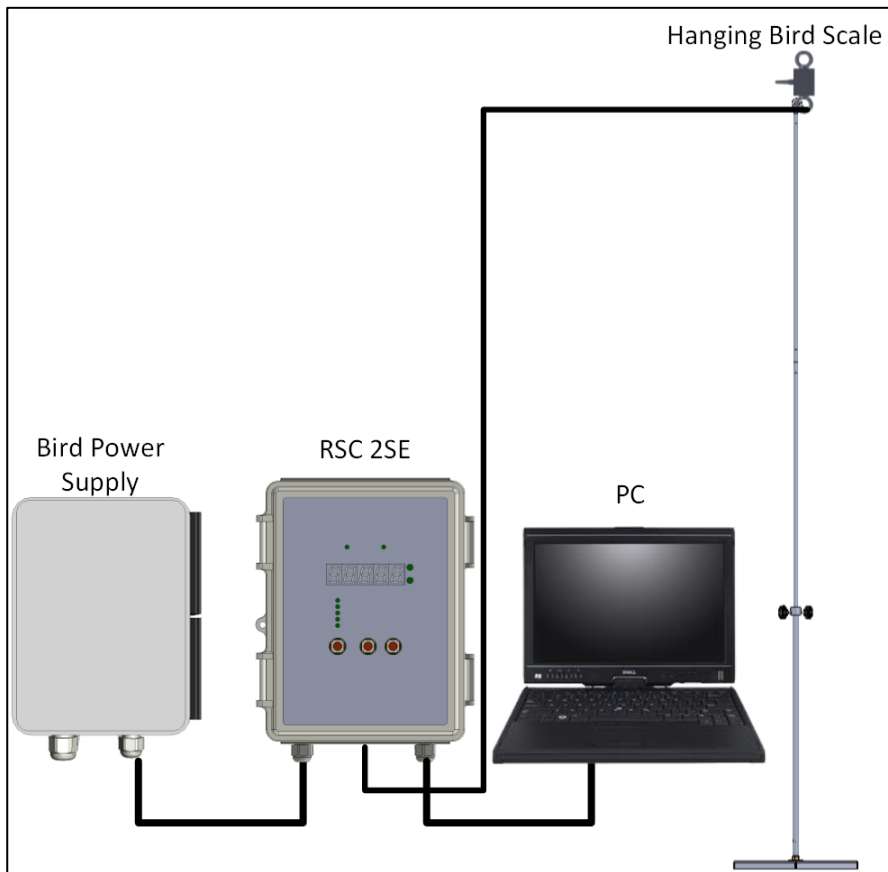


Figure 1: RSC-2SE Block Diagram

## 3.1 Installing the Unit

1. Mount the unit.
2. Wire the RSC-2SE to:
  - Computer (DB-9 connector)
  - Bird Scales (Figure 3)



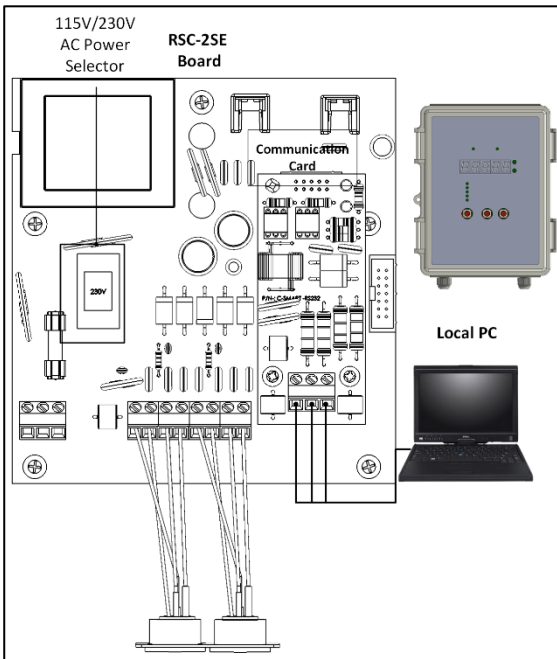


Figure 2: RSC-2SE Center Wiring Diagram

3. Open the unit and select the required voltage, 115 or 230 volts.
  4. Apply power.
- All LEDs briefly light up.

NOTE By default the unit is set to 230 volts.

NOTE To connect the RSC-2SE to a PC requires a communication card (outlined in Figure 2) (P/N P-RSC2SE-RS232) and ScaleNet installed on the PC.

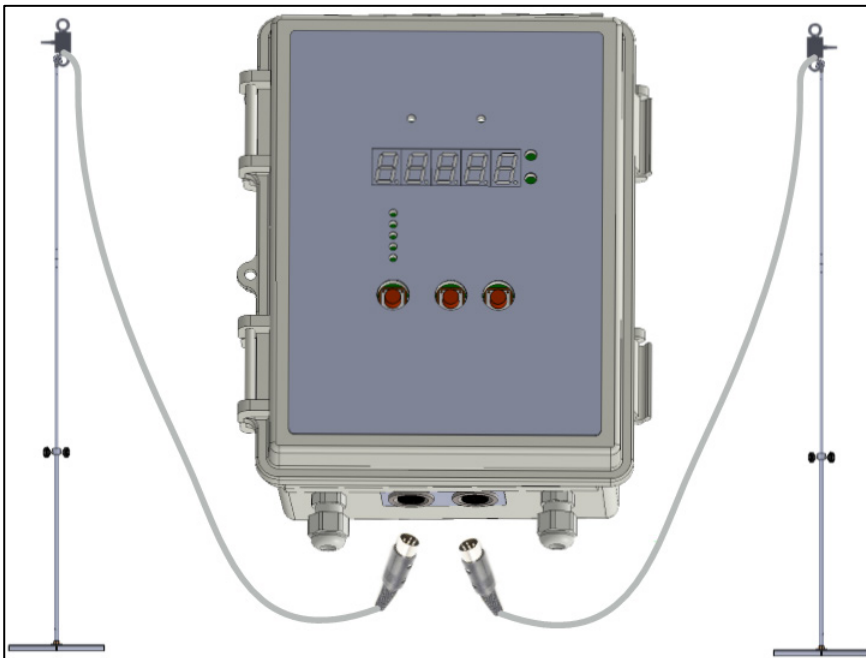


Figure 3: RSC-2SEr Connection to the HRBS (example)

### 3.2 Installing the USB Driver

The following procedure details how to install R-USB Driver version 5.00. This driver must be installed **before** plugging in the USB cable between the host computer and the R-USB plug.

1. Ensure that the USB cable is disconnected from Communicator before installing the driver.
2. On the CD, go to . . . \RSC-2SE\Rotem USB Driver 5.4.24.
3. Click the exe file.
4. Follow the instructions.
5. Restart the computer.
6. Connect the supplied USB cable from the computer to the RSC unit.

**NOTE** *If older versions of the driver exist on the computer, the installation program must delete them. Click Yes if prompted.*

### 3.3 Installing ScaleNet

1. On the CD go to . . . \RSC-2SE\ScaleNet 1.0.19\Full.
5. Click SETUP.EXE .
2. Follow the instructions.
3. Restart the computer.

**NOTE** *For details on using the ScaleNet program, refer to Communication program For RSC-2.pdf, found on the CD.*

### 3.4 Changing the Fuse

The RSC-2SE comes supplied with a spare fuse.

#### **To change the fuse:**

1. Disconnect the power.

**WARNING!** *DO NOT CHANGE THE FUSE WHEN THE UNIT IS CONNECTED TO A POWER SOURCE!*

2. Open the unit.
3. Remove the plastic fuse cover.
4. Remove the fuse.
5. Put the new fuse in place.

**CAUTION** *The fuse must be 315 mA/250 VAC.*

### 3.5 Environmental Protection



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.

# 4 Configuration



The following section details how to set up the RSC-2SE Unit, Ver 7.1. RSC-2SCE supports broilers and breeders modes. While most of the configuration is the same for both modes, there is a difference when defining the bird curves.

- Cold Start
- Defining the Parameters
- Growth Day
- Adjusting the Bird Curve Offset

## 4.1 Cold Start

Perform a Cold Start to reset (erase) the unit function parameters to their default definitions. Perform a Cold Start before the initial use or when directed to by a technician.

There are two type of Cold Starts:

- Complete reset. This option resets all parameters to the default settings, erases the calibration settings, and initiates a configuration wizard.
  1. Disconnect the power
  2. Press  simultaneously.
  3. Apply power. F.Cold appears on the screen.
- Partial reset. This option resets all parameters to the default settings **except for the calibrations settings** and initiates a configuration wizard.
  1. Disconnect the power
  2. Press  simultaneously.
  3. Apply power. S.Cold and then the software version appears on the screen.

## 4.2 Defining the Parameters

- Introduction to Configuring the RSC-2SE
- Procedure










### 4.2.1 Introduction to Configuring the RSC-2SE

The following information is necessary when configuring your unit.

- RSC supports broiler and breeder modes.
  - In broiler mode, data from both scales is collected jointly. In breeder mode, data from each scale is collected separately.
  - The configuration is the same for both modes except for the curve selection.

- RSC 2SCE supports two types of bird weight curves:
  - Auto: The controller then automatically calculates each day's reference weight.
  - Factory Default Curve: The controller loads an industry standard bird curve.

#### 4.2.2 Procedure

1. Perform a Cold Start or press  and  simultaneously
  - If you performed a Cold Start, immediately after the software version appears, press .
2. 9r - Lb appears. Press arrow key and select kg or pounds. Press .
3. Bro (Broiler) and BrE (Breeder) appear. Press an arrow key and select the mode. Press .
4. brEEd appears. Use the arrow key to select the bird weight curve. Press .
  - Broiler mode: Select one curve for both scales. Broiler Curves:
    - Cobb500
    - Ross308
    - Ross708
    - Cobb700
  - Breeder mode: Each scale has a separate curve. Select a curve for scale 1 and a curve for scale 2. Breeder Curves:
    - Coob500FF Dark Out
    - Coob500FF Dark Open Sided
    - Coob500FF Slow Dark
    - Coob500FF Slow Open
    - Cobb700
5. PC appears. This is the unit number, which is used to set up communication between the RSC-2SE and other controllers. Give the unit a unique ID number. Press .
6. bAud appears. This is the baud rate.; 9600 is the default. Use the arrow keys to select a different baud rate if required. Press  and confirm.
7. ESC appears. Press  to exit.




### 4.3 Growth Day

The Growth Day is the age of the birds for the indicated platform. You can have different growth days for each weighing platform.

You can adjust the growth day with the arrow keys to a maximum of 500.

- If you change the growth day without clearing previous history, old history mixes with new data. To prevent corrupting your data while reviewing history use the History function; do not simply move the growth day back.
- If your birds weigh differently, adjust the reference weight manually to approximately the weight of your birds to start collecting bird weights.

**To change the growth day.**

1. Press  until you get to **Growth Day**.
2. Press .
3. Press the arrows keys until you get to the correct day and press .
4. After the initial configuration, you can change the growth date at anytime. RSC-2SE will ask you to confirm the change.


**NOTE** *Version 7.01R05 supports setting the growth day as -7 or above. However, the system does not accept any weight data until Day 0.*

### 4.4 Adjusting the Bird Curve Offset

When using one of the industry standard bird curves, you can adjust the curve offset.

 **RSC-2SE must be installed and connected to a scale.**

1. Press  and .

While holding them down, press . The type of bird curve (auto/industry standard) and that day's reference weight appear.

2. Press the arrow keys to adjust the reference weight.

3. Press .

Notes:

- When using an industry standard curve, RSC-2SE takes the difference between the industry standard curve and that day's new curve point and applies that difference to the entire curve. This difference is the offset.  
For example, if the day's curve point is 0.230 pounds and you adjust it to 0.250 pounds, RSC-2SE raises each day's offset by 0.02 pounds.
- When using the auto curve, RSC-2SE adjusts that day's data point only.
- When in breeder mode, there is a separate curve for each scale. Changing one scale's offset does not affect the other scale's offset.

# 5 Main Menu

The following sections describe the RSC-2SE functions.

- Average Weight
- Number of Weights
- Daily Gain/Standard Deviation
- CV/Uniformity
- Growth Day

## 5.1 Average Weight

The average weight shown is the average of birds weighed since midnight. The average weight in the display pertains to the indicated weighing platform.

Whenever the RSC-2SE acquires a new bird weight, it flashes this weight several times before continuing to show the average weight. A flashing display indicates the latest bird's weight; a steady display indicates an average weight.

## 5.2 Number of Weights

This shows the number of birds weighed on the indicated weighing platform.

## 5.3 Daily Gain/Standard Deviation

By default, this parameter shows the weight gained since the previous day. Press the Up Arrow for the standard deviation (SD) of the average weight, Down Arrow to show daily gain.

Standard Deviation is a scientific measure of how even are the bird weights. For more information on Standard Deviation, refer to Standard Deviation, page 21.

## 5.4 CV/Uniformity

Coefficient of Variation (CV) is another scientific measure of how even the bird weights are. It is related to Standard Deviation.

Uniformity is the usual way evenness of bird weights is measured. Press the Up Arrow for Uniformity and the Down Arrow for Coefficient of Variation.

For more information on the CV, refer to CV, page 22.

## 5.5 Growth Day

Refer to Growth Day, page 13.

# 6 Advanced Functions

The following sections describe the RSC-2SE advanced functions. Each description is followed by a series of frequently asked questions regarding that function.

- Defining a New Flock
- Weighing
- History
- Scale Calibration
- Time Update

## 6.1 Defining a New Flock

NOTE *You cannot perform this function after a Cold Start. The current Growth Day must be 1 or higher.*

1. Press  until you get to Growth Day. The current growth day is displayed.
2. Press  until the number goes to 0 (zero). CLEAR appears.
3. Press .
4. dAY appears. Use the arrow keys to define the day (from 1 to -7).
5. Press . SurE appears.
  - To approve: Press . YES appears. Press .
  - To cancel: Press . no appears. Press .

## 6.2 Weighing

- Using the Scale
- Weighing Questions

### 6.2.1 Using the Scale

If you **press and hold Select** for 2 or 3 seconds, the RSC-2SE switches into weighing mode, and indicates this by showing **SCALE** in the display for several seconds. To correctly use this feature, be sure



to keep the scale empty during this time, since the RSC-2SE automatically calibrates the weight to be considered as zero weight.

After the zero weight appears in the display, you can weigh objects just as you would on a typical bathroom or grocery scale. To return to bird weighing mode, press the Select key briefly.

#### To use the Scale:

1. Keep the scale empty and steady. Start with the usual average weight in the display.
2. If you have more than one weighing platform, wait until the Scale Indicator lights for the scale platform you wish to use.
3. Press and hold **Select** until SCALE appears in the display. Then release the key.
4. Wait until the display returns to zero, all the while keeping the scale weighing platform empty and steady.
5. Weigh objects as desired by placing them on the platform. Their weight appears in the display.
6. To return to normal operation, briefly press **Select**. ESC will appear momentarily in the display.

### 6.2.2 Weighing Questions

- **Will the other weighing platform continue to weigh birds while this platform is in special weighing mode?**

No.

- **How heavy an object can I weigh?**

This depends on the particular weighing platform. The small stainless steel chicken platform can weigh up to 50 lb (25 kg); the larger stainless steel turkey platform can weigh up to 100 lb (50 kg). Review the specifications for the hanging platforms.

- **How accurate are the scales?**

All scale platforms have 0.2% basic accuracy.

- **Can I calibrate the scales?**

Yes. Each platform must be individually calibrated prior to use using the calibration procedure described later in this manual.

## 6.3 History

Use the History function to review data from previous growth days. You can review all data (Average Weight, Uniformity, etc.) for each growth day in the past without affecting scale operation.

- Viewing the History
- History Questions

### 6.3.1 Viewing the History

1. Press and hold **Up Arrow** until -HIS- appears in the display briefly. Be sure to observe the momentary -HIS- indication, since the display will return to the average weight for today without any other indication.
2. Use the Select, Up and Down arrow keys as you would during normal operation to review data. For example,
  - To review data on day 10, move to the Growth Day main menu using the Select key. Then adjust the growth day using the arrow keys.
  - Press Select to choose a particular item, such as Uniformity.

- To review historical data for a different growth day, move to the growth day item again with the Select key and repeat steps 2.1' and 2.2'.
3. To exit history mode, press and hold the Select key until -Esc- appears briefly in the display.

### 6.3.2 History Questions

- **Does the RSC-2SE continue to weigh birds while in History Mode?**  
Yes, it continues to operate normally in the background.
- **How can I tell that the RSC-2SE is in History mode?**  
The RSC-2SE briefly displays -HIS- when it switches into history mode.  
The display stops flashing new weights as they are acquired. You can see whether new weights are being acquired by watching the Number of Weights for the current growth day.

NOTE *In normal operation, the RSC-2SE briefly flashes each new bird weight before continuing to display the average weight.*

- You cannot go to Growth Day zero.
- You cannot go past the current Growth Day.
- When you press and hold Select again, it will show -ESC- instead of SCALE. However:
  - If you were in history mode, you will exit it.
  - If you were not in history mode, you will enter SCALE mode. Press Select again in this case to return to normal operation.
- **What is the best way to tell the RSC-2SE is in History mode?**  
Carefully watch for the brief -HIS- display when the RSC-2SE switches into history mode.
- **How can I view Histograms?**  
You can view Histograms at a personal computer using Munters Scale Center software. The software provides other important features as well.

## 6.4 Scale Calibration

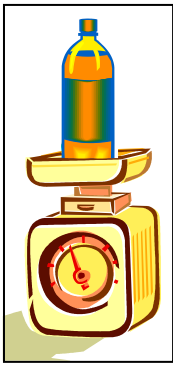
Upon installation, each weighing platform should be calibrated. Allow a minimum 10 minute warm up time after turning on power before calibration.

- How to Calibrate
- Scale Calibration Questions

### 6.4.1 How to Calibrate

1. Obtain a precision weight of about 5 to 10 pounds (2 to 5 kilograms). The minimum calibration weight is 1 pound (500 grams).

NOTE *A low cost precision weight may be easily obtained at most grocery stores. Purchase a suitable beverage (such as a 2 liter soft drink, gallon of milk), and weigh it on the government certified scales at the checkout. Most grocery store cashiers will gladly sell and weigh a precision weight for you.*



2 liters soft drink  
(gallon of milk, etc.)

Government certified  
grocery store scale

**CAUTION** *Keep the platform empty of birds and steady during the calibration process.*

2. **Press and Hold Simultaneously** the Select and Down Arrow keys when the scale indicator for the appropriate platform is lit.



3. **CAL-1** or **CAL-2** appears in the display, depending on which platform you are calibrating. Release the Select and Down Arrow keys.

**NOTE** *If you are adding a second platform, or the desired scale indicator light never lights, refer to the **Parameters** section below. A platform for calibration is selected by pressing **up** or **down** buttons. You will need to enter a calibration number initially to make the RSC-2SE recognize the platform and start switching between the two. This number does not need to be accurate.*

4. Press **Select**. The display starts flashing **CAL-1** or **CAL-2**. During this period the RSC-2SE is calculating the tare, so it is particularly important not to disturb the platform in any way during this period.

5. The display shows 1.00 and the appropriate scale indicator light flashes. Place the precision weight on the platform, and adjust the value in the display using the arrow keys until it registers the correct weight.

6. Press **Select**. The display will start flashing the weight you entered. During this period it is calibrating to your precision weight, so it is particularly important not to disturb the platform in any way.

7. After several seconds, the display shows **Good** if the test is successful. **ERR-3** if the test fails and **ERR-4** if the weight tested is too small. Press **Select** to return to normal operation.

#### 6.4.2 Scale Calibration Questions

- **Do I need to clean the weighing platform prior to calibration?**

No. The calibration procedure uses the same 'change in weight' principle that is used during normal bird weighing. As long as you do not change the amount of debris on the platform, its presence will not affect calibration.

- **Will the other platform continue to operate normally while I calibrate this one?**

No. During calibration all normal weighing operations stop.

- **I want to calibrate Scale 2, but only the Scale 1 indicator light is on.**

This is normal. By factory default, the RSC-2SE uses scale platform 1 only. To start using scale platform 2, you need to signal the RSC-2SE that it has another platform by entering a 'calibration number' other than 0 in the Calibration Parameter. See the Parameters section below. A platform for calibration is selected by pressing **up** or **down** buttons.

- **How often should I calibrate the scales?**

Munters recommends calibration once a year.

- **I see a calibration factor number on my scale platform. What is this?**

This is a factory calibration number for the platform. You can enter it manually into the calibration number as described in the Parameters section below for a quick approximate calibration.

## 6.5 Time Update

The RSC-2SE has an internal battery backed clock. You can use this to schedule bird weighing for particular hours of the day in the Parameters section.

### To set the clock:

1. Press and hold simultaneously **Select** and **Up Arrow** until the time appears in the display in hh:mm format.
2. The hour will be flashing. To adjust it, use the Up and Down Arrow keys.

**NOTE** *The hour is in 24 hour format. For example, 5:00 PM will show as 17.00.*

3. When finished adjusting the hour, press **Select**. The minutes starts flashing.
4. Adjust the minutes using the arrow keys. You can press and hold an arrow key to move more quickly.
5. When finished adjusting the minutes, press **Select**. Using the arrow keys, select the appropriate day of the week.
6. Press **Select**. Using the arrow keys, set the date.
7. Press **Select**. The display briefly shows -ESC- and returns to normal operation.

### To view the time and date:

# 7 Technical reference

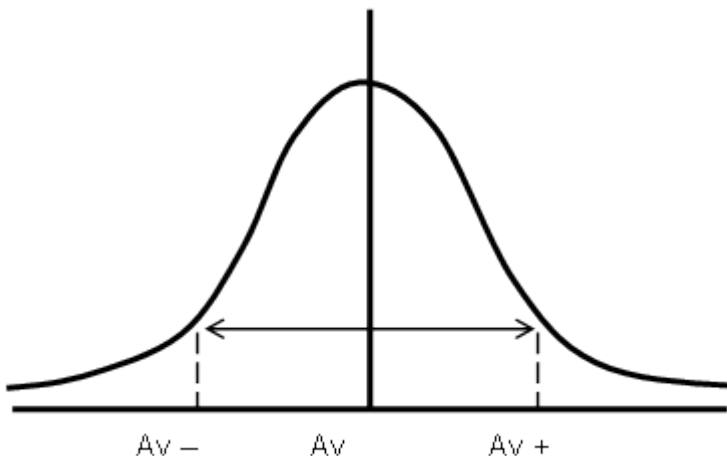
The following sections define RSC concepts.

- Standard Deviation
- CV
- Uniformity (Homogeneity or Evenness)
- Alarms List

## 7.1 Standard Deviation

The standard deviation is kind of the "mean of the mean," and often can help you find the story behind the 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.

If you looked at normally distributed data on a graph, it looks something like this:



The x-axis is the weight. The y-axis (the vertical one) is the number of weights for each value on the x-axis.

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

$\sigma$  = Standard Deviation  
 $\sum$  : Sum of the square ( X (weights) – Average weight)  
 $\bar{x}$  : Average Weight

### Standard Deviation

n = Number of weights.

The smaller the standard deviation, the more uniform the flock's weight.

## 7.2 CV

The - Coefficients' of Variation (CV) (shown in percentage) is calculated using the following formula:

$$CV = (\text{standard deviation} / \text{Average}) \times 100$$

The CV is expresses the standard deviation as a percentage of the average weight. This term describes the variation among the recorded body weights accounting for the relative size of the birds. A 0.1 pound variation, for example, is more important for one week birds than for much larger 8 week birds.

## 7.3 Uniformity (Homogeneity or Evenness)

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

The formula for Uniformity is:

$$\text{Uniformity} = (\text{number of birds within } \pm 10\% \text{ of Average} / \text{Number of weights}) \times 100$$

## 7.4 Alarms List

- **Err-1:** Load cell-1 or load cell-2 are disconnected. Recheck wire connections and load cells color order.
- **Err-2:** Calibration numbers of both loading cells equals zero (0). Recalibrate the loading cells or feed the correct amount manually.
- **Err-3:** Calibration failed. Check if loading cell is disconnected.
- **Check polarity:** See if loading cell's readings drop when a weight is placed on the platform.
- **Err-4:** Calibration with a weight less than 100 grams.

# 8 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 unforeseeable 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 RSC-2SE, (for example cables, weights, 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.

***WARNING!*** *In the interests of improving the quality of its products and services, Munters reserves the right at any time and without prior notice to alter the specifications in this manual.*

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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