



# Ranger<sup>®</sup> 7000 Scales Instruction Manual





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## 1. INTRODUCTION

### 1.1 Description

The Ranger 7000 scale is a precision weighing instrument that will provide you with years of service if properly cared for. The Ohaus Ranger 7000 scales are available in capacities from 3000 grams to 35 kilograms.

### 1.2 Features

**Modular Design:** Ohaus Ranger 7000 scales are composed of two interconnected modules: a Terminal and a Base. Depending on the user's needs, the unit can be operated with the Terminal either attached to, or remote from, the Base, with a single interconnect cord 2 meter long. An optional tower kit and extended cord are also available as accessories.

### 1.3 Definition of Signal Warnings and Symbols

Safety notes are marked with signal words and warning symbols. These show safety issues and warnings. Ignoring the safety notes may lead to personal injury, damage to the instrument, malfunctions and false results.

#### Signal Words

|                       |                                                                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WARNING</b>        | for a hazardous situation with medium risk, possibly resulting in injuries or death if not avoided.                                        |
| <b>CAUTION</b>        | for a hazardous situation with low risk, resulting in damage to the device or the property or in loss of data, or injuries if not avoided. |
| <b>Attention Note</b> | For important information about the product<br>For useful information about the product                                                    |

#### Warning Symbols



General Hazard



Electrical Shock Hazard



Alternating Current



Information

### 1.4 Safety Precautions



**Caution:** Read all safety warnings before installing, making connections, or servicing this equipment. Failure to comply with these warnings could result in personal injury and/or property damage. Retain all instructions for future reference.

- Verify that the input voltage range printed on the data label and the plug type matches the local AC power to be used.
- Only connect models supplied with a grounded power cord to a compatible grounded power receptacle.
- Do not position the scale such that it is difficult to disconnect the power cord from the power receptacle.
- Make sure that the power cord does not pose a potential obstacle or tripping hazard.
- This scale is for indoor use only.
- Use the scale in dry locations only.
- Do not drop loads on the pan.
- Use only approved accessories and peripherals.
- Operate the equipment only under ambient conditions specified in these instructions.
- Disconnect the equipment from the power supply when cleaning.
- Do not operate the equipment in hazardous or unstable environments.
- Service should only be performed by authorized personnel.

## 2. INSTALLATION

### 2.1 Unpacking

Carefully remove your Ranger 7000 scale and each of its components from the package. The included components vary depending on the scale model (see table below). Save the packaging to ensure safe storage and transport.

| Included Component |                    | Photo                                                                               | R71MHD3<br>R71MHD6 | R71MD3<br>R71MD6 | R71MHD15<br>R71MHD35 | R71MD15<br>R71MD35 |
|--------------------|--------------------|-------------------------------------------------------------------------------------|--------------------|------------------|----------------------|--------------------|
| Terminal           |                    |    | X                  | X                | X                    | X                  |
| Weighing Base      |                    |    | X                  | X                | X                    | X                  |
| Weighing Platform  | 200 x 200 mm       |    | X                  |                  |                      |                    |
| Weighing Platform  | 240 x 240 mm       |   |                    | X                |                      |                    |
| Weighing Platform  | 311 x 371 mm       |  |                    |                  | X                    | X                  |
| Wind Shield        |                    |  | X                  |                  |                      |                    |
| Compact Disc       | Instruction Manual |                                                                                     | X                  | X                | X                    | X                  |

## 2.2 Installing Components

Refer to the illustrations and instructions below to identify and assemble your Ranger 7000 scale with its components. All components must be assembled before using the scale.

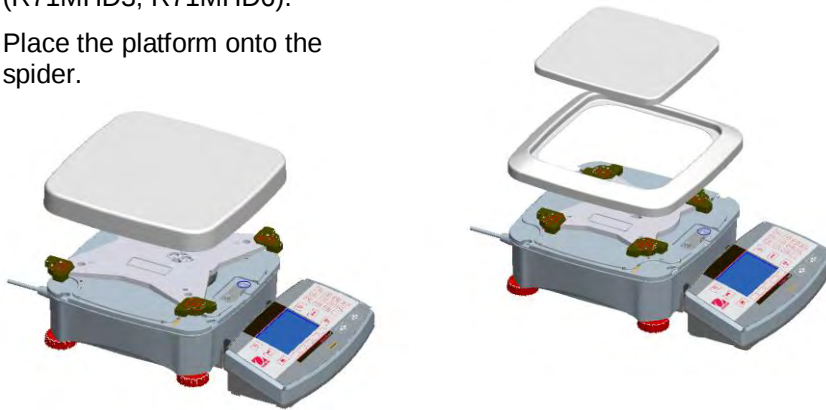
### 2.2.1 Terminal Setup

When the Ranger 7000 is delivered, the Terminal is already attached (docked) to the Base. No additional setup is necessary. Refer to the illustrations and instructions below to identify and assemble your Ranger 7000 Scale.

**Note:** The Terminal is identical for all Ranger 7000 Scale models.

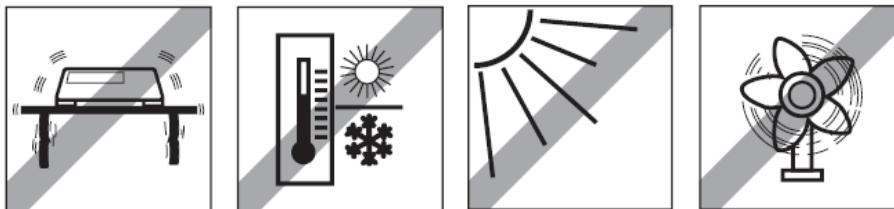
### 2.2.2 Installing the Wind Ring, Weighing Platform

1. Place the Wind Ring in position (R71MHD3, R71MHD6).
2. Place the platform onto the spider.



## 2.3 Selecting the Location

Avoid excessive vibrations, heat sources, air current, or rapid temperature changes. Allow sufficient space.



**Note:** Interface cables connect to the terminal. The terminal can be detached and mounted on a wall or positioned on a table separate from the scale.

## 2.4 Connecting Power and Turning ON the Scale

The Ranger 7000 comes with an AC power cord. Connect the power cord to a suitable grounded electrical outlet and press the ON button on the side of the base (see figure below).



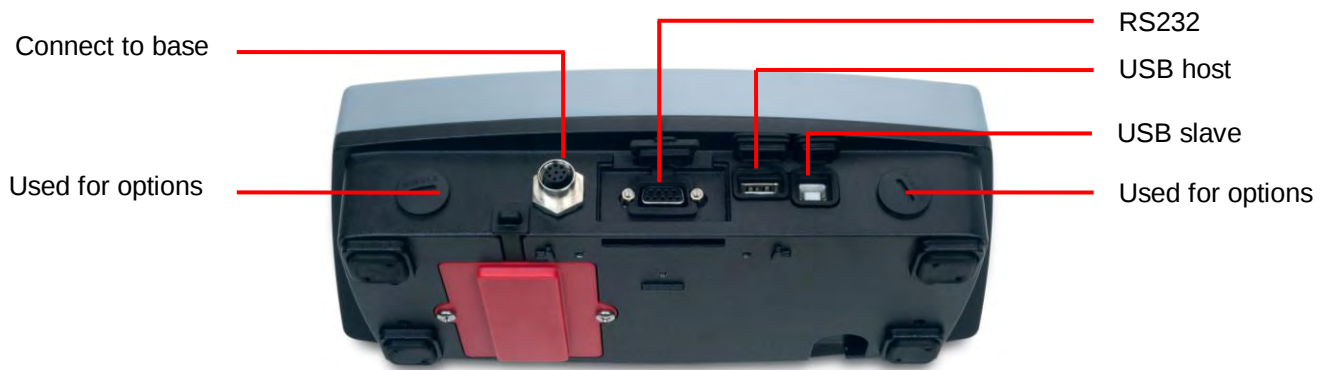
Power ON button on the side of the base



**Attention:** Allow equipment to warm up for 60 minutes for optimal weighing performance.

## 2.5 Connecting the Interface

Use the built-in RS-232 port to connect either to a computer or a printer with a standard (straight-through) serial cable. Or connect using the scale's USB port.



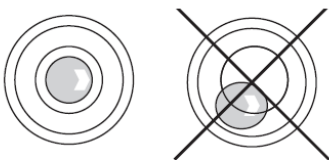
Interface connections on back of Terminal.



Thread terminal cable along cable coils on bottom of scale.  
Or pass cable through groove near release button.

## 2.6 Leveling the scale

Only scales that have been leveled precisely horizontally provide accurate weighing results. The certified scales have a spirit level to simplify alignment.



Turn the adjustable feet of the scale until the spirit level's air bubble is inside the inner circle.

## 2.7 Remote Terminal Operation

The Terminal communicates with the weighing base via the Terminal cable. This cable must be plugged into the Terminal for the Ranger 7000 to display properly. If desired, the Ranger 7000 scale may be operated either with the Terminal attached, or remotely (up to 2 meters away).

## 2.8 Separating the Terminal from the Weighing Base

1. To detach, press both the Release buttons inward (both at the same time) and gently pull the Terminal towards you (outward) until the Terminal is detached. These Release buttons disengage the two hooks holding the Terminal to the Base. A cable is attached to the Terminal. Take care to not damage or disconnect this cable.
2. To reattach the Terminal, press in the two Release buttons and slide the Terminal into the Base until the Terminal hooks click and engage to hold the Terminal in place.

Release Buttons

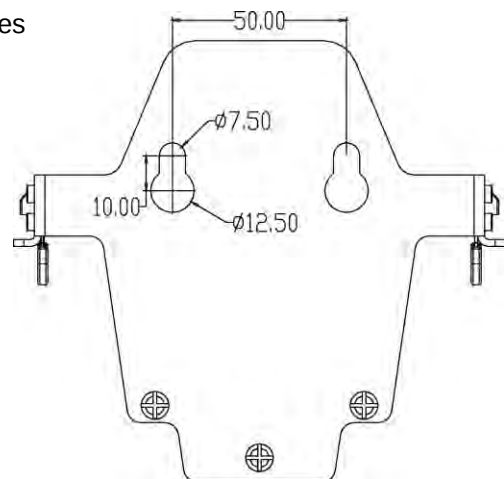
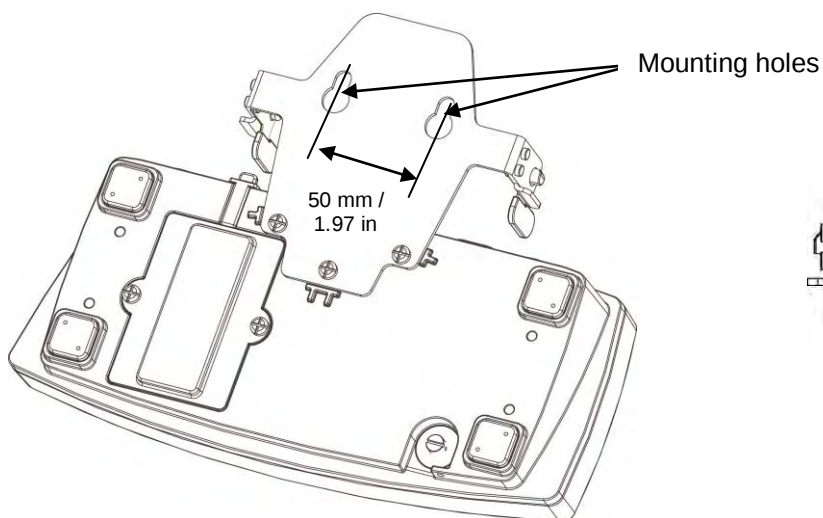


Base and Terminal



## 2.9 Terminal Mounting

If desired, the Terminal may be mounted to a wall or table using fasteners (not supplied) that are appropriate for the type of mounting surface.



## 2.10 Initial Calibration

When the Scale is first installed, and when it is moved to another location, it must be calibrated to ensure accurate weighing results.

### 2.10.1 Internal calibration

R71MHD models have built in AutoCal which can calibrate the scale automatically and does not require calibration masses. If preferred, the scale can be manually calibrated with external masses. Have the appropriate calibration masses available before beginning calibration. Refer to the Calibration Section for masses and calibration procedure.

### 2.10.2 External calibration

R71MD models can only be manually calibrated with external masses.

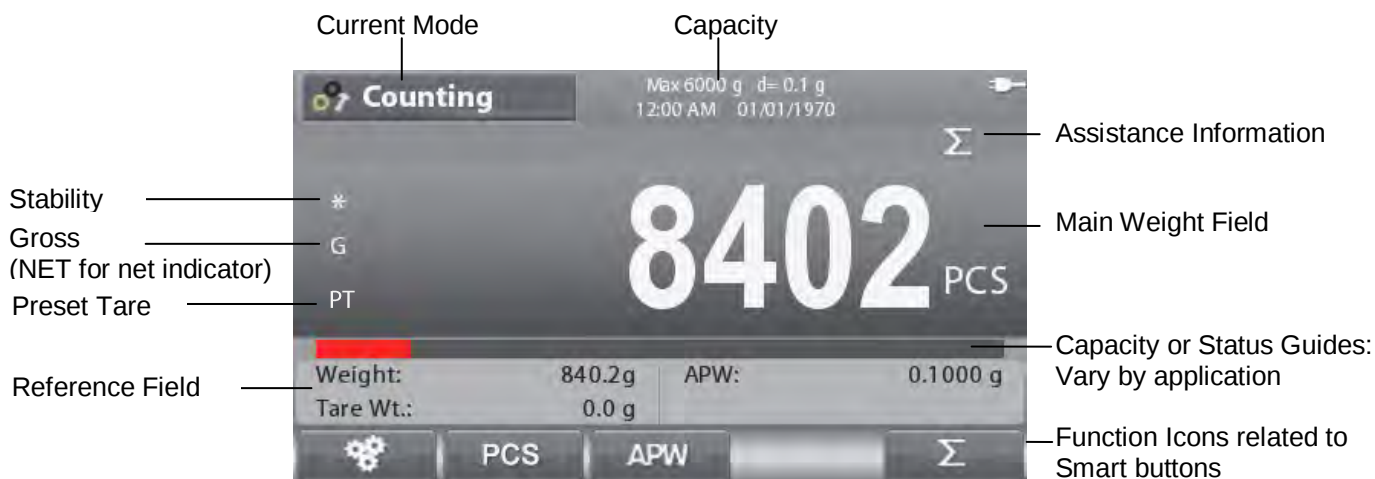
### 3. OPERATION

#### 3.1 Overview of Display, Home Screen

##### CONTROLS

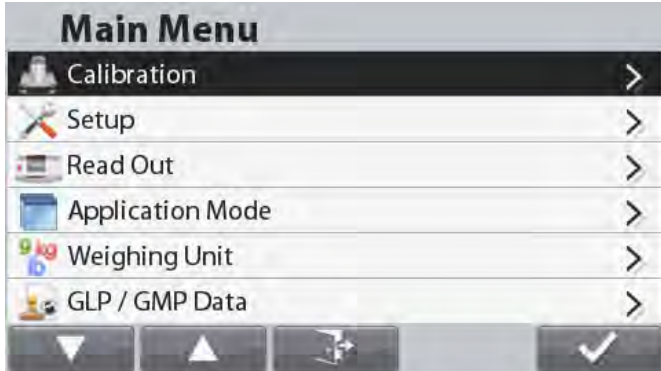


| Button | Action                                                                                                                                   |                                                                                                                                                                                                                                    |
|--------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | Enter/Exit the library menu                                                                                                              |                                                                                                                                                                                                                                    |
|        | Switch between available application modes                                                                                               |                                                                                                                                                                                                                                    |
|        | Send the measurement data to available communications ports according to current settings.                                               |                                                                                                                                                                                                                                    |
|        | Display information about Application Mode, Library, User and Menu                                                                       |                                                                                                                                                                                                                                    |
|        | Enter/Exit the User menu                                                                                                                 |                                                                                                                                                                                                                                    |
|        | Switch the main weighing unit between the available units                                                                                |                                                                                                                                                                                                                                    |
|        |                                                                                                                                          | Short Press: Input '2'-'9'<br>To Enter 'A' press  2 times. For lower case 'Z', press  5 times.                                                                                                                                     |
|        |                                                                                                                                          | Short Press: Input '0'<br>Long Press: Go to User Login screen                                                                                                                                                                      |
|        |                                                                                                                                          | Short Press: Input '1'<br>Long Press: Switch platform between scale 1 and scale 2                                                                                                                                                  |
|        |                                                                                                                                          | Short Press: Clear character/string when editing string<br>If no input is active, clear the current active library<br>When there is no value added, pressing this button will switch the value sign between positive and negative. |
|        |                                                                                                                                          | Short Press: Input '.', space, '_'<br>To Enter '_' press  3 times.                                                                                                                                                                 |
|        | Perform Zero operation                                                                                                                   |                                                                                                                                                                                                                                    |
|        | Perform Tare operation<br>When entering the value first and then pressing this button the number input will be set to preset Tare value. |                                                                                                                                                                                                                                    |



### 3.2 Principal Functions and Main Menu

#### MENU & SCREEN NAVIGATION

|                                                                                                                                                                                                                                                           |                                                                 |                                                                                      |                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Press the <b>Menu</b>  button to open the menu list.                                                                                                                     |                                                                 |                                                                                      |                                                                                                                                               |
| Press the button below  and  to move down and up the list respectively.                 |                                                                 |                                                                                      |                                                                                                                                               |
| To select the highlighted menu item, press  . Press  to move back to previous screen. |                                                                 |                                                                                      |                                                                                                                                               |
|                                                                                                                                                                        | <b>Calibration:</b><br>Select to view calibration options.      |  |                                                                                                                                               |
|                                                                                                                                                                        | <b>Setup:</b><br>Select to view user preferences.               |                                                                                      |                                                                                                                                               |
|                                                                                                                                                                        | <b>Read Out:</b><br>Select to view scale settings.              |                                                                                      |                                                                                                                                               |
|                                                                                                                                                                        | <b>Application Modes:</b><br>Select to view application modes.  |                                                                                      |                                                                                                                                               |
|                                                                                                                                                                        | <b>Weighing Units:</b><br>Select to view weighing units.        |                                                                                      |                                                                                                                                               |
|                                                                                                                                                                        | <b>GLP and GMP Data:</b><br>Insert user data for traceability.  |   | <b>Alibi Memory:</b><br>Select to view Alibi Memory settings.<br><b>Note:</b> This menu is only displayed when the Alibi option is installed. |
|                                                                                                                                                                        | <b>Communication:</b><br>Select to view communication settings. |   | <b>Maintenance:</b><br>Select to view Maintenance settings.                                                                                   |
|                                                                                                                                                                        | <b>User Profile:</b><br>Select to view User Profile settings.   |   | <b>Event Counter:</b><br>Select to view Maintenance settings.                                                                                 |

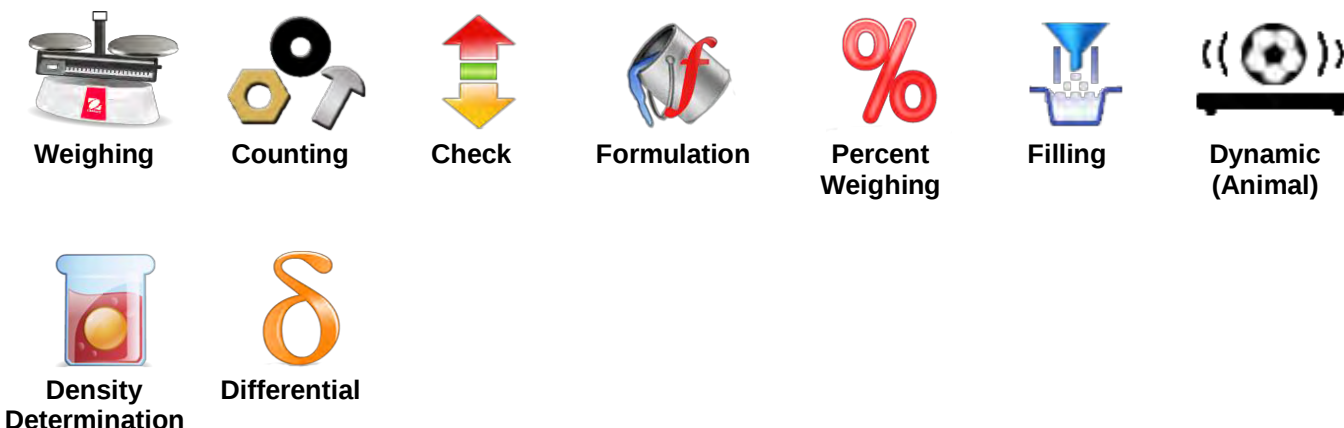
### 3.3 Overview of Parts and Features



#### 4. APPLICATIONS

The scale can be configured to operate in various Application modes, see section 5.6 for information on how to activate/deactivate each application mode. Press  to select an activated application. The current application will be shown in the upper left corner of the home screen (See section 3.1).

The Ranger 7000 incorporates the following Applications



**Note:** Before using any application, be sure the scale has been leveled and calibrated.

##### 4.1 Weighing

Use this application to determine the weight of items in the selected unit of measure.

Press the  button until **Weighing** is displayed in the upper left portion of the home screen (this application is the default).

Press **Tare** or **Zero** if necessary to begin.

Place objects on the pan to display the weight. When stable, the \* appears.

The resulting value is displayed in the main Weighing Line in the active unit of measure.



The **WEIGHING** Home screen

Main Display Line

Reference Fields

Functions



Application Icon

**Note:** Refer section 9.5, or press the  button for button icon explanation.

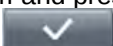
##### 4.1.1 Application Setup

The Application can be customized for various user preferences.

Press the button corresponding to the  icon to enter **Configuration**.



The **Configuration** screen is now displayed.

Select the list item and press the button corresponding to , to change the setting as desired.

To return to the Application home screen, press the button corresponding to .



The **Weighing Configurations** are defined below (defaults in **Bold**)

| Item       | Available Settings             | Comments                              |
|------------|--------------------------------|---------------------------------------|
| Auto Tare  | On, <b>Off</b>                 | To enable Automatic Tare              |
| Chain Tare | <b>On</b> , Off                | To enable Chain (Continuous) Tare     |
| Accumulate | Off , Automatic, <b>Manual</b> | To enable Accumulation / Totalization |
| Statistics | On, <b>Off</b>                 | To enable Statistics                  |

#### 4.1.2 Accumulation

To start Accumulate weighing data, place the item on the pan and press the button corresponding to the icon . The top accumulation icon will start blinking. The load to be accumulated has to be  $\geq 5d$  and the next accumulation can only start once the pan has been cleared.

**Note:** The Accumulation icon  will only be shown if Accumulate is set to Manual (see section 4.1.1).



#### Viewing the Statistics results

When Statistics is set to ON, press the info button  to view the statistics results.

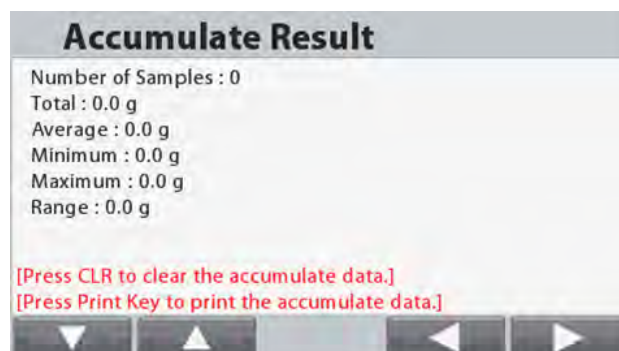
#### Viewing the Accumulation results

To view the accumulation results, press the info button  then press the button corresponding to the icon .

The **Accumulate Result** screen is displayed.

**Note:** To return to home screen press the  button.

Press the  button to print Accumulation result.

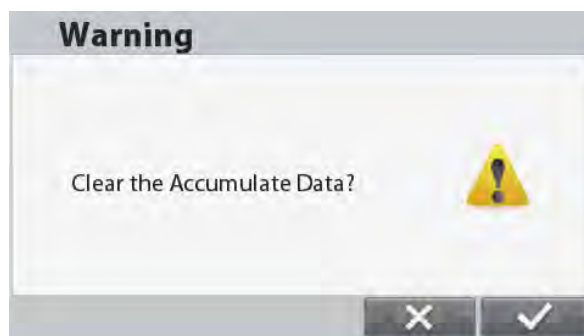


### Clearing the Statistics / Accumulation results

To clear the statistic / accumulation results, press the button



A warning message appears. Press the button corresponding to the icon to confirm the deletion or press the button corresponding to the icon to abort the deletion and return to previous screen.



#### 4.1.3 Input/Output (I/O) Setup

The I/O's can be customized for various user preferences.

The I/O's are defined below (defaults in **Bold**).

| Item              | Available Settings                                           |
|-------------------|--------------------------------------------------------------|
| Discrete Input 1  | <b>Off</b> , Zero, Tare, Clear Tare, Print, Unit, Accumulate |
| Discrete Input 2  | <b>Off</b> , Zero, Tare, Clear Tare, Print, Unit, Accumulate |
| Discrete Output 1 | <b>Off</b> , Overload, Underload                             |
| Discrete Output 2 | <b>Off</b> , Overload, Underload                             |
| Discrete Output 3 | <b>Off</b> , Overload, Underload                             |
| Discrete Output 4 | <b>Off</b> , Overload, Underload                             |

**Note:** The I/O's will only work when the I/O Option Board have been installed. See the Accessory list in section 9.4 for information.

The option I/O board provides two isolated inputs and four dry-contact normally open relay outputs which can be used for simple process weighing.

Press the button to enter the Main Menu.

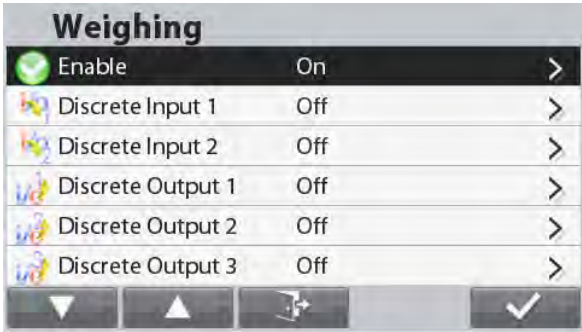
With the button corresponding to the icon, go down the list and highlight **Application Mode**. Enter this sub-menu by pressing the button corresponding to the icon.



In the Application Mode menu enter the **Weighing** sub-menu.



The Weighing sub-menu is now displayed.  
Select the list item and press the button corresponding to the  icon to change the setting as desired.



4.2 Counting

Use this application to count samples of uniform weight.

Counting

Press the  button until **Counting** is displayed in the upper left portion of the home screen.  
The default (or last) Average Piece Weight (APW) is displayed.  
Setup APW value according to section 4.2.1 and then place objects on the pan to display the number of pieces.



The **COUNTING** Home screen

Main Display Line

Reference Fields  
Functions



**Note:** Refer section 9.5, or press the  button for button icon explanation.

4.2.1 Set the Average Piece Weight (APW)

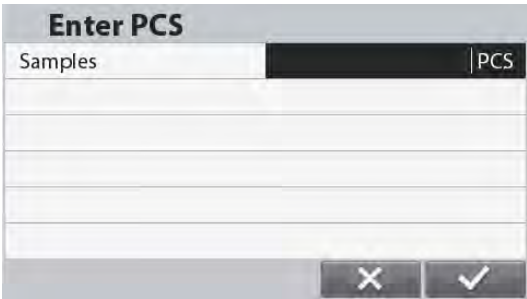
**Note:** It is recommended that the APW is larger than 1d. If APW is between 0.05d and 1d, a warning screen will be displayed and the information line will show 'Low APW'. If APW is less than 0.05d an error screen will appear and the APW value cannot be stored.

There are three ways to set the APW:

1. Positive Sampling

Place the sample on the pan and then key in the number of pieces using the alphanumerical keypad and press the button corresponding to the  icon to confirm.

Alternatively, press the button corresponding to the  icon. A numeric input screen appears. Key in the desired number of pieces using the alphanumerical keypad, and then press the button corresponding to the  icon.  
The display returns to the Home screen.



## 2. Negative Sampling

Place container with the samples on the pan and Tare the scale, a NET 0 will be displayed. Remove the samples from the container; a negative net reading will be displayed. Input the sample size with the numeric keypad and then press the button corresponding to the icon . The value will be displayed on the screen.

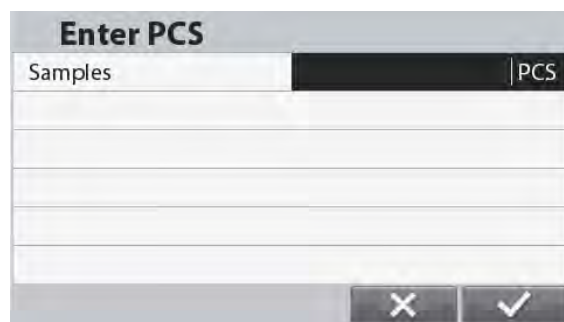
Alternatively, press the button corresponding to the icon .

A numeric input screen appears.

Key in the desired number of pieces using the alphanumeric keypad, and then press the button

corresponding to the  icon.

The display returns to the Home screen.



The 'Enter PCS' screen shows a numeric input field for 'Samples' and a unit selector set to 'PCS'. At the bottom are 'X' and '✓' buttons.

## 3. Entering a Known APW

Key in the Piece Weight using the alphanumeric keypad and press the button corresponding to the icon  to confirm and store the APW.

Alternatively, press the button corresponding to the icon .

A numeric input screen appears.

Key in the Piece Weight using the alphanumeric keypad, then

press the button corresponding to the  icon.

The display returns to the Home screen with the new APW value displayed in the reference field.



The 'Enter APW' screen shows a numeric input field for 'APW' and a unit selector set to 'g'. At the bottom are 'X' and '✓' buttons.

### Notes:

When current unit is metric (g, kg), APW unit is g.

When current weighing unit is imperial (lb, oz), APW unit is lb.

### 4.2.2 Application Setup

The Application can be customized for various user preferences.

Press the button corresponding to the  icon to enter **Configuration**.



The 'Counting' screen displays a large '150 PCS' count. At the top, it shows 'Max 6000 g d= 0.1 g' and '12:00 AM 01/01/1970'. At the bottom, it shows 'Weight: 900.0g' and 'APW: 6.0000 g'. Navigation buttons for 'PCS' and 'APW' are at the bottom.

The **Configuration** screen is now displayed.

Select the list item and press the button corresponding to the  icon to change the setting as desired.

To return to the Application home screen, press the button corresponding to .



The Counting Configurations are defined below (defaults in **Bold**).

| Item           | Available Settings             | Comments                                |
|----------------|--------------------------------|-----------------------------------------|
| Auto Tare      | On, <b>Off</b>                 | Turns Automatic Tare on/off             |
| Chain Tare     | <b>On</b> , Off                | To enable Chain (Continuous)Tare        |
| Accumulate     | Off , Automatic, <b>Manual</b> | To enable Accumulation / Totalization   |
| Auto Opt.*     | <b>On</b> , Off                | To enable Automatic Optimization of APW |
| APW Auto Save* | <b>On</b> , Off                | To enable APW Automatic save            |
| Opt. Beep      | <b>On</b> , Off                | To enable Optimization Beep             |

**Note:** \* If APW value is directly entered (not through sampling), this feature does not work.

#### 4.2.3 Accumulation

See section 4.1.2 for details about the Accumulation feature.

#### 4.2.4 Input/Output (I/O) Setup

The I/O's can be customized for various user preferences.

The I/O's are defined below (defaults in **Bold**).

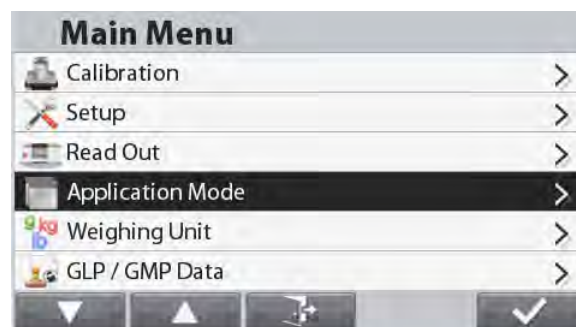
| Item              | Available Settings                                           |
|-------------------|--------------------------------------------------------------|
| Discrete Input 1  | <b>Off</b> , Zero, Tare, Clear Tare, Print, Unit, Accumulate |
| Discrete Input 2  | <b>Off</b> , Zero, Tare, Clear Tare, Print, Unit, Accumulate |
| Discrete Output 1 | <b>Off</b> , Overload, Underload                             |
| Discrete Output 2 | <b>Off</b> , Overload, Underload                             |
| Discrete Output 3 | <b>Off</b> , Overload, Underload                             |
| Discrete Output 4 | <b>Off</b> , Overload, Underload                             |

**Note:** The I/O's will only work when the I/O Option Board have been installed. See the Accessory list in section 9.4 for information.

The option I/O board provides two isolated inputs and four dry-contact normally open relay outputs which can be used for simple process weighing.

Press the  button to enter the Main Menu.

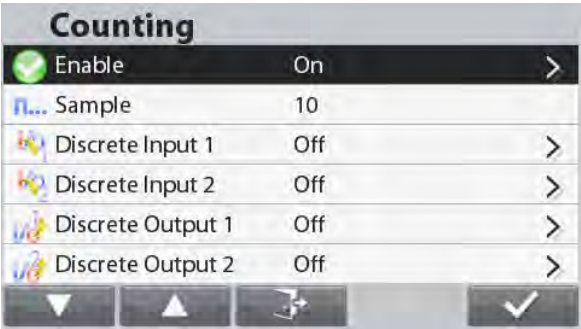
With the button corresponding to the  icon, go down the list and highlight **Application Mode**. Enter this sub-menu by pressing the button corresponding to the  icon.



In the Application Mode menu enter the **Counting** sub-menu.



The Counting sub-menu is now displayed.  
Select the list item and press the button corresponding to the  icon to change the setting as desired.



4.3 Check

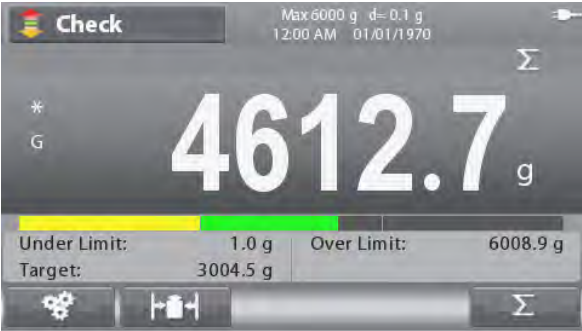
Check is used to compare the weight or pieces of a sample against target limits.

Press the  button until **Check** is displayed in the upper left portion of the home screen.  
Two different modes can be selected: Weight and Pieces.  
Three different methods to enter the check limits: Over and Under, Nominal Weight Tolerance, or Nominal Percent Tolerance.

Setup check limits according to section 4.3.1 or 4.3.2. Place object on the pan to check if the weight is within the limits.

4.3.1 Check Weighing (default)

Make sure that the check mode is set to check weighing in the configuration menu .  
Place objects on the pan. The **Under/Accept/Over** status is shown in the progress bar area while the actual weight of the item is shown on the main Display Line.



The **CHECK** Home screen

Main Display Line

Reference Fields  
Functions



Application Icon

**Note:** Refer section 9.5, or press the  button for button icon explanation.

## Defining Over/Under Limits and Tolerance

Press the button corresponding to the  icon to enter **Limit Setup**.

Select Over or Under Limit and press the button corresponding to the  icon to edit the value.

Enter the desired value for the limit using the alphanumeric keypad. Then press the button corresponding to the  icon to set the value and go back to previous screen.

Alternatively, the limits can be set by Target Weight Tolerance.

To set the tolerance, press the button corresponding to the  icon to enter the **Tolerance setup**.

To switch between **Over/Under Load**, **Target Weight Tolerance**, **Target Weight Percentage** press the button corresponding to the  icon. If desired, edit the value by using the alphanumeric keypad and press the button corresponding to the  icon to save the changes and return to the previous screen.

**Note:** The three set limits methods share the same data.

| Edit Limit  |          |
|-------------|----------|
| Over Limit  | 5100.0 g |
| Under Limit | 4800.0 g |
|             |          |
|             |          |
|             |          |
|             |          |
|             |          |

| Edit Limit  |          |
|-------------|----------|
| Target      | 4950.0 g |
| + Tolerance | 150.0 g  |
| - Tolerance | 150.0 g  |
|             |          |
|             |          |
|             |          |

| Edit Limit  |          |
|-------------|----------|
| Target      | 4950.0 g |
| + Tolerance | 3 %      |
| - Tolerance | 3 %      |
|             |          |
|             |          |
|             |          |

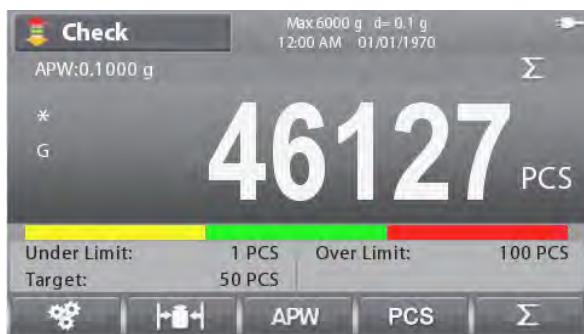






### 4.3.2 Check Counting

Press the configuration button  and select Check Mode to Check Counting. Place objects on the pan. The **Under/Accept/Over** status is shown in the progress bar area while the actual number of pieces is shown on the main Display Line.



The **CHECK** Home screen

Main Display Line

Reference Fields  
Functions

**Note:** Refer section 9.5, or press the  button for button icon explanation.

#### Set the Average Piece Weight (APW)

**Note:** It is recommended that the APW is larger than 1d. If APW is between 0.05d and 1d, a warning screen will be displayed and the information line will show 'Low APW'. If APW is less than 0.05d an error screen will appear and the APW value cannot be stored.

There are three ways to set the APW, see section 4.2.2 for instructions.

#### Defining Over/Under Limits

Press the button corresponding to the  icon to enter **Limit Setup**.

**Note:** See section 4.3.1 for information on how to set the Over/Under limits.

### 4.3.3 Application Setup

The Application can be customized for various user preferences.

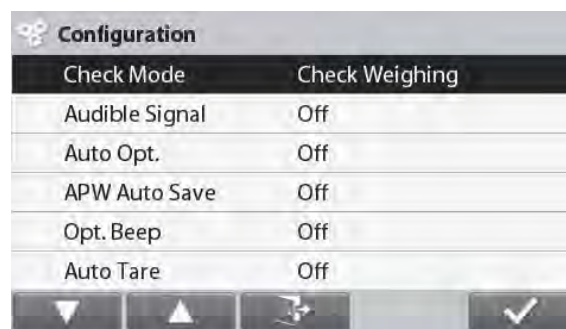
Press the button corresponding to the  icon to enter **Configuration Setup**.



The **Configuration Menu** is now displayed.

Select the list item and press the button corresponding to , to change the setting as desired.

To return to the Application home screen, press the button corresponding to .



The Check Configurations are defined below (defaults in **Bold**).

| Item           | Available Settings                           | Comments                                                                                                                    |
|----------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Check Mode     | <b>Check Weighing</b> , Check Counting       | To set Mode                                                                                                                 |
| Audible Signal | <b>Off</b> , Under, Accept, Over, Under&Over | To enable Beeper Signal                                                                                                     |
| Auto Opt*      | <b>On</b> , Off                              | To enable Automatic Optimization of APW                                                                                     |
| APW Auto Save* | <b>On</b> , Off                              | To enable APW Automatic save                                                                                                |
| Opt. Beep*     | <b>On</b> , Off                              | To enable Optimization Beep                                                                                                 |
| Auto Tare      | On, <b>Off</b> , On Accept                   | To enable Automatic Tare<br>'On Accept' means that if the object weight is within accept range, auto Tare will be performed |
| Chain Tare     | <b>On</b> , Off                              | To enable Chain (Continuous) Tare                                                                                           |
| Accumulate     | Off, Automatic, <b>Manual</b>                | To enable Accumulation / Totalization                                                                                       |
| Graph Display  | <b>Bar</b> , Block                           | To set Graph Display Type                                                                                                   |

**Note:** \* Only available in Check Counting mode.

### Positive Check

Positive check is used to determine when the material added to the scale is within the target range. In this case the UNDER and OVER limits must be positive values. (The OVER limit must be greater than the UNDER limit.)

### Negative Check

Negative check is used to determine when the material removed from the scale is within the target range. In this case the UNDER and OVER limits are both negative values.

The UNDER limit must be greater than the OVER limit (for example: UNDER= -10/OVER= -15).

Place the item to be weighed on the scale and press **Tare**.

Remove a portion of the item until it is within the ACCEPT range.

### Zero Check

Zero check is used when comparing subsequent samples to an initial reference sample. In this case, the UNDER limit must be a negative value and the OVER limit must be a positive value.

Place the reference item on the scale and press **Tare**. Remove the reference sample and place the item to be compared on the scale to determine if it is within the ACCEPT range.

#### 4.3.4 Input/Output (I/O) Setup

The I/O's can be customized for various user preferences.

The I/O's are defined below (defaults in **Bold**).

| Item              | Available Settings                                           |
|-------------------|--------------------------------------------------------------|
| Discrete Input 1  | <b>Off</b> , Zero, Tare, Clear Tare, Print, Unit, Accumulate |
| Discrete Input 2  | <b>Off</b> , Zero, Tare, Clear Tare, Print, Unit, Accumulate |
| Discrete Output 1 | <b>Off</b> , Under, Over, Accept, Under/Over                 |
| Discrete Output 2 | <b>Off</b> , Under, Over, Accept, Under/Over                 |
| Discrete Output 3 | <b>Off</b> , Under, Over, Accept, Under/Over                 |
| Discrete Output 4 | <b>Off</b> , Under, Over, Accept, Under/Over                 |

**Note:** The I/O's will only work when the I/O Option Board have been installed. See the Accessory list in section 9.4 for information. The option I/O board provides two isolated inputs and four dry-contact normally open relay outputs which can be used for simple process weighing.

Press the  button to enter the Main Menu.

With the button corresponding to the  icon, go down the list and highlight **Application Mode**. Enter this sub-menu by pressing the button corresponding to the  icon.

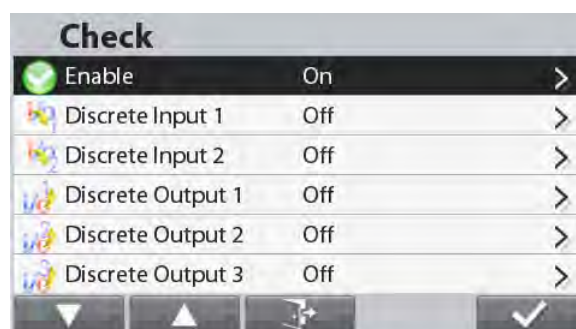


In the Application Mode menu enter the **Check** sub-menu.



The Check sub-menu is now displayed.

Select the list item and press the button corresponding to the  icon to change the setting as desired.



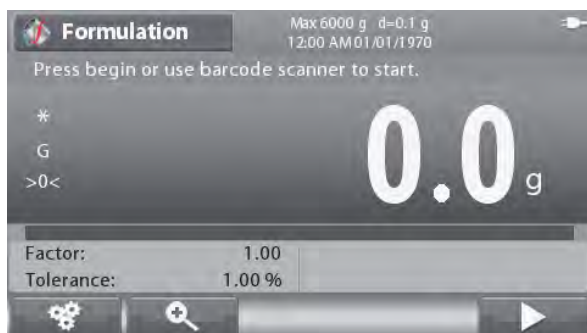
#### 4.4 Formulation

Use this application for compounding and recipe making. The number of components can be 1 to 100. Formulation has two available modes of operation: **Free Formulation** and **Recipe Formulation**.

Press the  button until **Formulation** is displayed in the upper left portion of the home screen.

##### 4.4.1 Free Formulation (default)

This mode of Formulation allows the user to freely add components. A recipe can also be saved and printed when the formulation is finished.



The **FORMULATION** Home screen

Main Display Line

Reference Fields  
Functions



Application Icon

**Note:** Refer section 9.5, or press the  button for button icon explanation.

Press the button corresponding to the  icon to enter the Enter Component screen.

Select the list item and press the button corresponding to the icon , to change the value as desired using the alphanumeric keypad.

The item Name and target Weight are required to be entered.

Press the button corresponding to the icon  to confirm all the values and continue with the formulation.

**Note:** The  icon will only appear when all the required values have been entered (name and target weight).

| Enter comp.                                                                                                                                                                                                                                                                                                                                                        |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| PN                                                                                                                                                                                                                                                                                                                                                                 | 11     |
| Name                                                                                                                                                                                                                                                                                                                                                               | comp.1 |
| Weight                                                                                                                                                                                                                                                                                                                                                             | 50 g   |
| Tare                                                                                                                                                                                                                                                                                                                                                               | 0.0 g  |
| <div>     </div> |        |

The entered target weight will be used as preset tare.

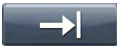
Place the required weight on the pan (add weight until the displayed value reaches zero again).

Press the button corresponding to the icon  to confirm the weight for the current component and to continue adding other components.

**Notes:** To terminate the formulation process, press the button corresponding to the  icon. If the added weight is over the tolerance limit, compensation will be performed according to the setup in the configuration (At the end, Off, Immediately).

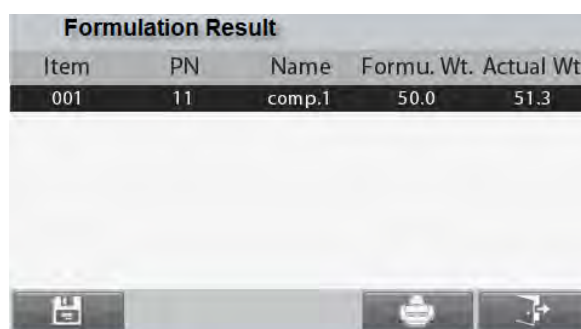
When the compensation is active (At the end or Immediately), if the component added is within tolerance the capacity bar is always in green color.

If one component added is outside the tolerance, the scale will do compensation for next items. In this case, the value displayed is not actual weight and the capacity bar will turn red.

To finish the formulation, press the button corresponding to the icon  and add the last component.

Then the formulation will finish and a Formulation Result screen is displayed.

| Formulation Result |    |        |            |            |
|--------------------|----|--------|------------|------------|
| Item               | PN | Name   | Formu. Wt. | Actual Wt. |
| 001                | 11 | comp.1 | 50.0       | 51.3       |



To print the formulation result press the button corresponding to the icon  or the button .

To save the formulation result, press the button corresponding to the icon .

To return to the main screen, press the button corresponding to the icon .

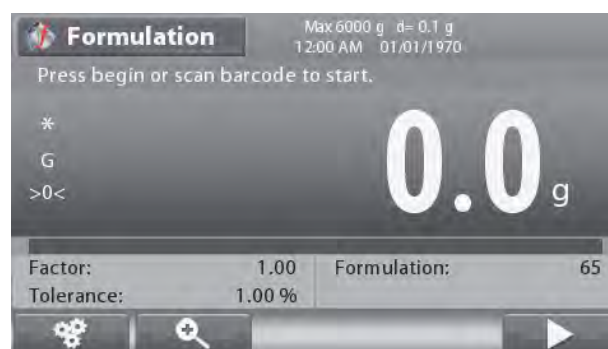
#### 4.4.2 Recipe Formulation

Make sure the formulation mode is set to recipe (see section 4.4.4 for instructions).

The information line will now show 'Please recall a recipe'

Recall a recipe from the Formulation Library by pressing the button . See section 4.10 for instructions on how to create/recall a Library record.

Press the button corresponding to the  icon or scan a barcode to start formulation.



The target weight in each recipe item will be used as preset tare.

Place the required weight on the pan (add weight until the displayed value reaches zero again).

Press the button corresponding to the icon  to confirm the weight for the current component and to continue adding other components or scan another barcode of the next component.



**Notes:** To terminate the formulation process, press the button corresponding to the  icon. If the added weight is over the tolerance limit, compensation will be performed according to the setup in the configuration (At the end, Off, Immediately).

When the compensation is active (At the end or Immediately), if the component added is within tolerance the capacity bar is always in green color.

If one component added is outside the tolerance, the scale will do compensation for next items. In this case, the value displayed is not actual weight and the capacity bar will turn red.

When all the components of the recipe have been added, the formulation will finish and a Formulation Result screen is displayed.

#### 4.4.3 Factor and Tolerance Setup

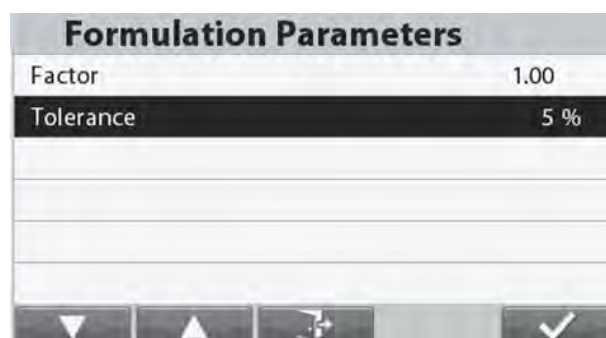
Press the button corresponding to the  icon to enter the Parameter screen.

Select the list item and press the button corresponding to the icon , to change the setting as desired using the alphanumerical keypad.

The Component **Factor** can be set to a value between 0.20 and 5.00 with 1.0 being the default.

The **Tolerance** can be set to a value between 0 and 15.0 % with 5 % being the default.

Press the button corresponding to the  icon to return to the Application Home screen.



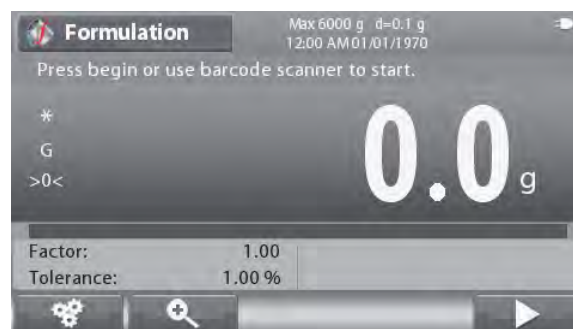
**Note:** Factor and Tolerance can only be set after the formulation has started.

Tolerance is +/-, for example: Tolerance = 5 % means that the tolerance is the range -5 % ~ +5 %.

#### 4.4.4 Application Setup

The Application can be customized for various user preferences.

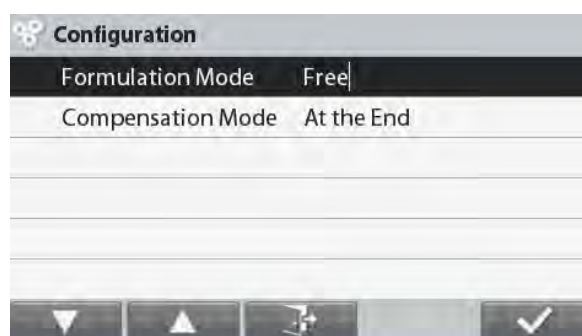
Press the button corresponding to the  icon to enter **Configuration**.



The **Configuration Menu** is now displayed.

Select the list item and press the button corresponding to , to change the setting as desired.

To return to the Application home screen, press the button corresponding to .



The **Formulation Configurations** are defined below (defaults in **Bold**).

| Item              | Available Settings                   | Comments                 |
|-------------------|--------------------------------------|--------------------------|
| Formulation Mode  | <b>Free</b> , Recipe                 | To set Mode              |
| Compensation Mode | <b>At the End</b> , Off, Immediately | To set compensation mode |

#### 4.4.5 Input/Output (I/O) Setup

The I/O's can be customized for various user preferences.

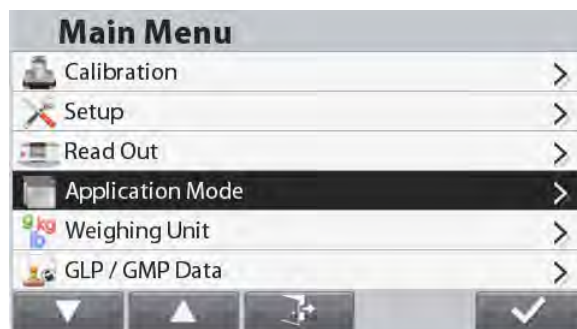
The I/O's are defined below (defaults in **Bold**).

| Item              | Available Settings                                              |
|-------------------|-----------------------------------------------------------------|
| Discrete Input 1  | <b>Off</b> , Zero, Tare, Clear Tare, Quit, Next Item, Last Item |
| Discrete Input 2  | <b>Off</b> , Zero, Tare, Clear Tare, Quit, Next Item, Last Item |
| Discrete Output 1 | <b>Off</b> , Overload, Underload                                |
| Discrete Output 2 | <b>Off</b> , Overload, Underload                                |
| Discrete Output 3 | <b>Off</b> , Overload, Underload                                |
| Discrete Output 4 | <b>Off</b> , Overload, Underload                                |

**Note:** The I/O's will only work when the I/O Option Board have been installed. See the Accessory list in section 9.4 for information. The option I/O board provides two isolated inputs and four dry-contact normally open relay outputs which can be used for simple process weighing.

Press the  button to enter the Main Menu.

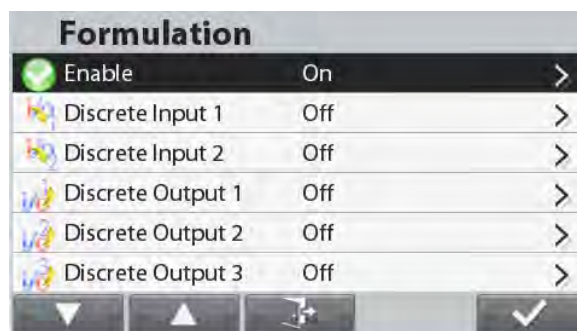
With the button corresponding to the  icon, go down the list and highlight **Application Mode**. Enter this sub-menu by pressing the button corresponding to the  icon.



In the Application Mode menu enter the **Formulation** sub-menu.



The Formulation sub-menu is now displayed. Select the list item and press the button corresponding to the  icon to change the setting as desired.



#### 4.5 Percent Weighing

Use Percent Weighing to measure the weight of a sample displayed as a percentage of a pre-established Reference Weight.

Press the  button until **Percent** is displayed in the upper left portion of the home screen.

Establish a reference weight according to section 4.5.1 and then place the objects on the pan to check the percentage.

The default (or last) Reference Weight is displayed.



The **PERCENT** Home screen

Main Display Line

Reference Fields  
Functions



Application Icon

**Note:** Refer section 9.5, or press the  button for button icon explanation.

### 4.5.1 Establishing a Reference Weight

There are three ways to establish a reference weight:

1. Key in the reference weight value using the alphanumeric keypad and then press the button corresponding to the  icon.
2. Press the button corresponding to the  icon to enter the **Edit Reference Weight** screen. The **Edit Reference Weight** screen is now displayed. Enter the desired value using the alphanumeric keypad and then press the button corresponding to the  icon to save and return to the Application home screen.
3. Place the reference weight on the pan and press the button corresponding to the  icon.



### 4.5.2 Application Setup

The Application can be customized for various user preferences.

Press the button corresponding to the  icon to enter **Configuration**.



The **Configuration Menu** is now displayed.

Select the list item and press the button corresponding to , to change the setting as desired.

To return to the Application home screen, press the button corresponding to .



The Percent Configurations are defined below (defaults in **Bold**).

| Item       | Available Settings             | Comments                               |
|------------|--------------------------------|----------------------------------------|
| Auto Tare  | On, <b>Off</b>                 | To enable Automatic Tare               |
| Chain Tare | <b>On</b> , Off                | To enable Chain Tare (continuous Tare) |
| Accumulate | <b>Off</b> , Automatic, Manual | To enter Accumulation / Totalization   |

4.6 Filling

This application allows the user to fill a container to a pre-determined target weight. The progress bar displays the filling status, and within 10 percent of the target value the progress bar converts to fine resolution (+/- 10%) for accurate results.

Press the  button until **Filling** is displayed in the upper left portion of the home screen. The default (or last) Target weight is displayed. Place objects on the pan to begin.



The FILLING Home screen

Main Display Line

Reference Fields  
Functions



Application Icon

**Note:** Refer section 9.5, or press the  button for button icon explanation.

4.6.1 Target Weight and Set Points Setup

There are three ways to set up the Target weight:

1. Place the weight on the pan and press button corresponding to the  icon.
2. Key in the target weight value using the alphanumerical keypad and press the button corresponding to the icon .
3. Press the button corresponding to the  (Set Point) icon to enter the **Edit Settings** screen.

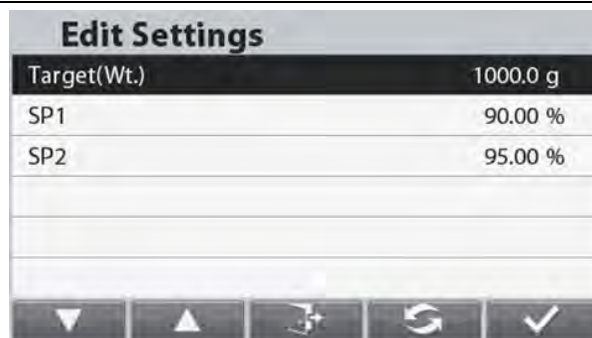
The **Edit Settings** screen is now displayed.

Press the button corresponding to the  icon to switch between Weight, Tolerance and Percent.

Select the list item and press the button corresponding to the icon , to change the setting as desired using the alphanumerical keypad.

To return to the Application home screen, press the button corresponding to the icon .





#### 4.6.2 Application Setup

The Application can be customized for various user preferences.

Press the button corresponding to the  icon to enter **Configuration**.



The **Configuration Menu** is now displayed.

Select the list item and press the button corresponding to the icon , to change the setting as desired.

To return to the Application home screen, press the button corresponding to the icon .



The **Filling Configurations** are defined below (defaults in **Bold**).

| Item       | Available Settings  | Comments                               |
|------------|---------------------|----------------------------------------|
| Auto Tare  | On, <b>Off</b>      | To enable Automatic Tare               |
| Chain Tare | <b>On</b> , Off     | To enable Chain Tare (Continuous Tare) |
| Accumulate | <b>Off</b> , Manual | To enable Accumulation / Totalization  |

#### 4.6.3 Input/Output (I/O) Setup

The I/O's can be customized for various user preferences.  
The I/O's are defined below (defaults in **Bold**).

| Item              | Available Settings                                                 |
|-------------------|--------------------------------------------------------------------|
| Discrete Input 1  | <b>Off</b> , Zero, Tare, Clear Tare, Print, Start/Stop, Accumulate |
| Discrete Input 2  | <b>Off</b> , Zero, Tare, Print, Start/Stop                         |
| Discrete Output 1 | <b>Off</b> , SP1, SP2, Target, Alarm                               |
| Discrete Output 2 | <b>Off</b> , SP1, SP2, Target, Alarm                               |
| Discrete Output 3 | <b>Off</b> , SP1, SP2, Target, Alarm                               |
| Discrete Output 4 | <b>Off</b> , SP1, SP2, Target, Alarm                               |

**Note:**

The output will be reset to normally open when either SP1 or SP2 is reached.

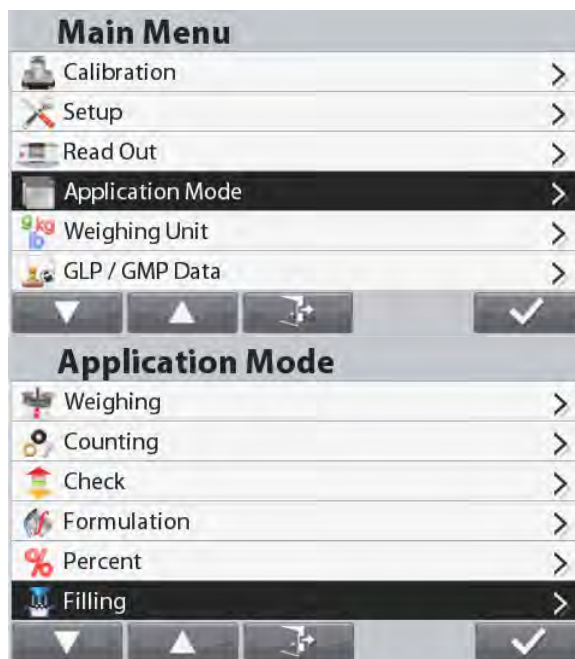
The I/O's will only work when the I/O Option Board have been installed. See the Accessory list in section 9.4 for information. The option I/O board provides two isolated inputs and four dry-contact normally open relay outputs which can be used for simple process weighing.

The outputs also only work when the button corresponding to the icon  has been pressed.

Press the  button to enter the Main Menu.

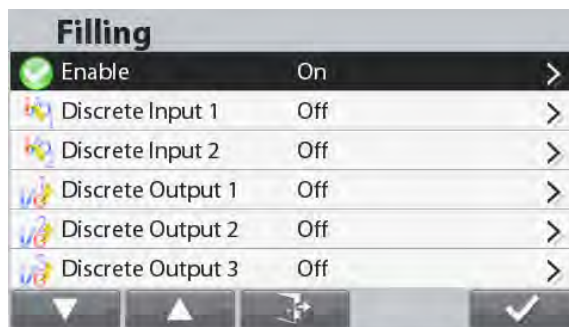
With the button corresponding to the  icon, go down the list and highlight **Application Mode**. Enter this sub-menu by pressing the button corresponding to the  icon.

In the Application Mode menu enter the **Filling** sub-menu.



The Filling sub-menu is now displayed.

Select the list item and press the button corresponding to the  icon to change the setting as desired.



#### 4.7 Dynamic Weighing

Use this application to weigh an unstable load, such as a moving animal. Three different start/reset modes can be selected: Manual (start and stop via key press), **Semi-Automatic** (auto-start with manual reset), and **Automatic** (start and stop automatically).

Press the  button until **Dynamic** is displayed in the upper left portion of the home screen.

Press the button corresponding to the icon  to start averaging.

To abort the averaging press the button corresponding to the icon .

When the averaging has finished, press the button corresponding to the icon  to reset.



The **DYNAMIC** Home screen

Main Display Line

Reference Fields  
Functions



Application Icon

**Note:** Refer section 9.5, or press the  button for button icon explanation.

4.7.1 Application Setup

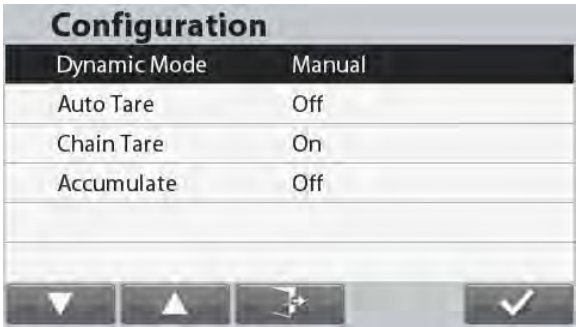
The Application can be customized for various user preferences.

Press the button corresponding to the  icon to enter **Application Setup**.



The **Configuration Menu** is now displayed.  
Select the list item and press the button corresponding to , to change the setting as desired.

To return to the Application home screen, press the button corresponding to .



The **Dynamic Configurations** are defined below (defaults in **Bold**).

| Item         | Available Settings                        | Comments                            |
|--------------|-------------------------------------------|-------------------------------------|
| Dynamic Mode | <b>Manual</b> , Semi-Automatic, Automatic | To set the Mode                     |
| Auto Tare    | On, <b>Off</b>                            | To enable Automatic Tare            |
| Chain Tare   | <b>On</b> , Off                           | To enable Chain (Continuous) Tare   |
| Accumulate   | <b>Off</b> , Automatic, Manual            | To enable Accumulate / Totalization |

### 4.7.2 Average Time Setup

Press the button corresponding to the  icon to enter the **Edit Average Time** screen.



The **Edit Average Time** screen is now displayed.

Enter the Average Time by using the alphanumerical keypad and press the button

corresponding to the  icon to change save the value and return to the Application home screen.

The default Average Time is 10 s.

**Note:** When the time is set to 0, the first stable weight over 5d will be displayed.

Averaging time can be set to a value between 0 and 60.



### 4.7.3 Input/Output (I/O) Setup

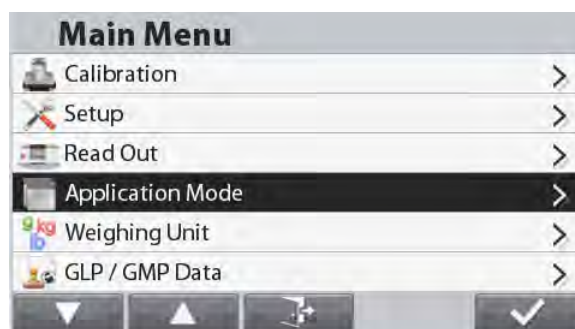
The I/O's can be customized for various user preferences.  
The I/O's are defined below (defaults in **Bold**).

| Item              | Available Settings                                                   |
|-------------------|----------------------------------------------------------------------|
| Discrete Input 1  | <b>Off</b> , Zero, Tare, Clear Tare, Print, Start, Reset, Accumulate |
| Discrete Input 2  | <b>Off</b> , Zero, Tare, Clear Tare, Print, Start, Reset, Accumulate |
| Discrete Output 1 | <b>Off</b> , Underload, Overload                                     |
| Discrete Output 2 | <b>Off</b> , Underload, Overload                                     |
| Discrete Output 3 | <b>Off</b> , Underload, Overload                                     |
| Discrete Output 4 | <b>Off</b> , Underload, Overload                                     |

**Note:** The I/O's will only work when the I/O Option Board have been installed. See the Accessory list in section 9.4 for information. The option I/O board provides two isolated inputs and four dry-contact normally open relay outputs which can be used for simple process weighing.

Press the  button to enter the Main Menu.

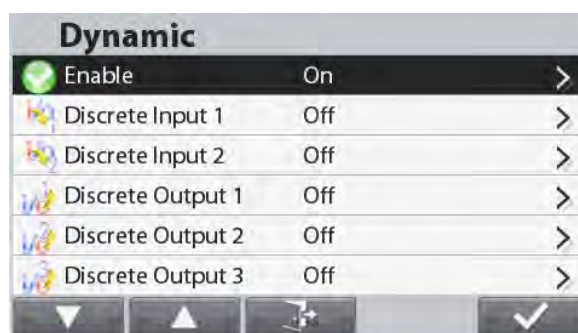
With the button corresponding to the  icon, go down the list and highlight **Application Mode**. Enter this sub-menu by pressing the button corresponding to the  icon.



In the Application Mode menu enter the **Dynamic** sub-menu.



The Dynamic sub-menu is now displayed. Select the list item and press the button corresponding to the  icon to change the setting as desired.



#### 4.8 Density Determination

The Ranger 7000 can be used to determine an object's density. Two types of density determination can be made:

1. Solids *more* dense than water
2. Solids *less* dense than water

Press the  button until **Density** is displayed in the upper left portion of the home screen.

Before making density measurements, establish the Application Settings.

Press the button corresponding to the icon  to start.

Check the object weight in air and when prompted press the button corresponding to the icon .

Check the object weight again when it is submerged in the liquid and when prompted press the button corresponding to the icon . The density of the object will be displayed.



The **DENSITY** Home screen

Main Display Line

Reference Fields  
Functions



Application Icon

#### Notes:

Refer section 9.5, or press the  button for button icon explanation.

### 4.8.1 Application Setup

The Application can be customized for various user preferences.

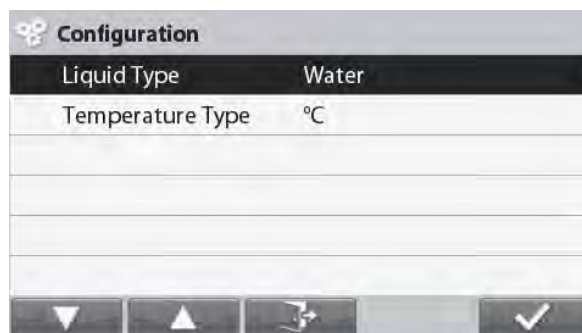
Press the button corresponding to the  icon to enter **Configuration**.



The **Configuration Menu** is now displayed.

Select the list item and press the button corresponding to , to change the setting as desired.

To return to the Application home screen, press the button corresponding to .



The **Density Determination Configurations** are defined below (defaults in **Bold**).

| Item             | Available Settings    | Comments                    |
|------------------|-----------------------|-----------------------------|
| Liquid Type      | <b>Water</b> , Other* | To set the Liquid type      |
| Temperature Type | <b>°C</b> , °F        | To set the Temperature Type |

**Note:** \* Other liquids that are not water.

### 4.8.2 Water Temperature / Liquid Density Setup

To set the water temperature or Liquid density (other liquids than water), please follow the instructions below.

#### Liquid type: Water

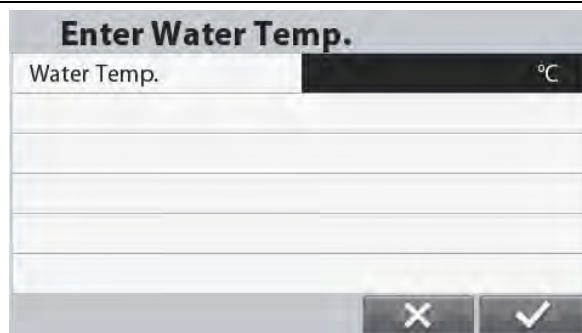
Press the button corresponding to the  icon to enter the **Enter Water Temperature** screen.



The **Enter Water Temperature** screen is now displayed.

Enter the water temperature by using the alphanumeric keypad and press the button

corresponding to the  icon, to save the value and return to the previous screen.



The screen displays 'Enter Water Temp.' at the top. Below it is a text input field labeled 'Water Temp.' followed by a unit indicator '°C'. There are several empty lines for input. At the bottom right, there are two buttons: a cross (X) and a checkmark (✓).

#### Liquid Type: Other

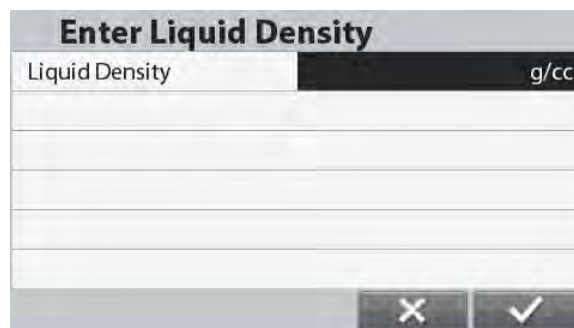
Press the button corresponding to the  icon to enter the **Enter Liquid Density** screen.



The screen displays 'Density' at the top. It shows a large digital display with '0.0000' and a unit indicator 'g/cm³'. Below the display, it shows 'Liquid Density: 0.9982 g/cm³', 'Air Weight: 0.0 g', and 'Liquid Weight: 0.0 g'. At the bottom, there are buttons for settings (gear icon), 'g/cc', and a right arrow.

The **Enter Liquid Density** screen is now displayed.

Enter the liquid density by using the alphanumeric keypad and press the button corresponding to the  icon, to save the value and return to the previous screen.



The screen displays 'Enter Liquid Density' at the top. Below it is a text input field labeled 'Liquid Density' followed by a unit indicator 'g/cc'. There are several empty lines for input. At the bottom right, there are two buttons: a cross (X) and a checkmark (✓).

#### 4.9 Differential Weighing

Differential weighing stores weight values of the samples. The samples can then be dried or processed and the difference in weight calculated. Up to 20 samples can be stored.

Press the  Button until **Differential** is displayed in the upper left portion of the home screen.



The screen displays 'Differential' at the top. It shows a large digital display with '0.0 g'. Below the display, it shows 'Diff. (wt.):', 'Diff. (%)', 'Initial wt.', and 'Final wt.'. At the bottom, there are buttons for settings (gear icon) and a list icon.

The **DIFFERENTIAL** Home screen

Main Display Line

Reference Fields  
Functions



Application Icon

**Note:** Refer section 9.5, or press the  button for button icon explanation.

#### 4.9.1 Application Setup

The Application can be customized for various user preferences.

Press the button corresponding to the  icon to enter **Configuration**.



The **Configuration Menu** is now displayed.

Select the list item and press the button corresponding to , to change the setting as desired.

To return to the Application home screen, press the button corresponding to .



The **Differential Configurations** are defined below (defaults in **Bold**).

| Item       | Available Settings | Comments                  |
|------------|--------------------|---------------------------|
| Auto Tare  | <b>Off</b> , On    | To set the Automatic Tare |
| Chain Tare | <b>On</b> , Off    | To set the Chain Tare     |

#### 4.9.2 Differential Operation

To start differential, please follow the instructions below.

Press the button corresponding to the  icon to enter **Edit Item**.



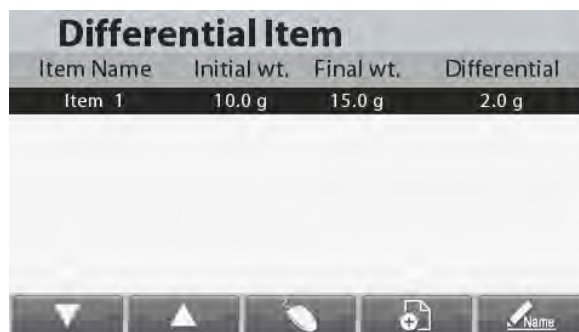
The **Edit Item Menu** is now displayed

Press  to add a new item. A maximum of 20 items can be created.

Press , the current item is selected and the scale returns to the main screen to start differential weighing.

Press  to edit the name and values of the item.

**Note:** All data will automatically be cleared when scale is powered Off.  
An item must be selected to start differential operation.



### 4.10 Library

When an item is processed on a regular basis, the item's data may be stored in memory for future use. This memory is referred to as the Scale's Library.

The following data is stored for the Application used:

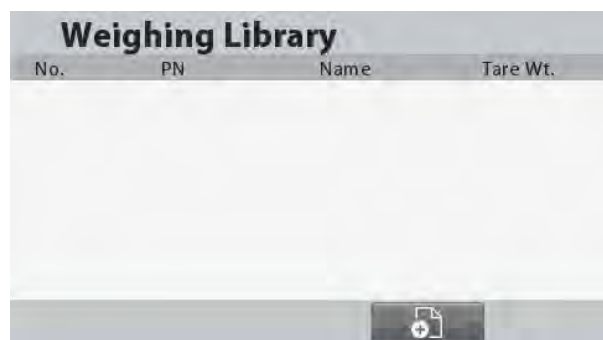
| Application  | PN<br>(Part Number) | Name | Preset Tare | APW | Ref./Target<br>Weight | Check<br>Limits | SP<br>Set Points | Max<br>Records |
|--------------|---------------------|------|-------------|-----|-----------------------|-----------------|------------------|----------------|
| Weighing     | x                   | x    | x           |     |                       |                 |                  | 300            |
| Counting     | x                   | x    | x           | x   |                       |                 |                  | 300            |
| Percent      | N/A                 |      |             |     |                       |                 |                  | x              |
| Check        | x                   | x    | x           | x   |                       | x               |                  | 300            |
| Dynamic      | N/A                 |      |             |     |                       |                 |                  | x              |
| Filling      | x                   | x    | x           |     | x                     |                 | x                | 300            |
| Formulation  | x                   | x    | x           |     | x                     |                 |                  | 30             |
| Differential | N/A                 |      |             |     |                       |                 |                  | x              |
| Density      | N/A                 |      |             |     |                       |                 |                  | x              |

**Notes:** Maximum length of PN and Name is 30 characters.

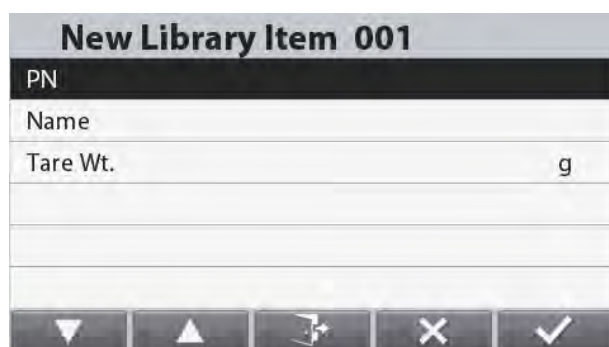
For the formulation library, each record can store up to 100 components.

#### 4.10.1 Creating a Library Record

To create a Library record, press the Library button . The requested data records will appear according to the active application mode (see section 4.10 above). In this example the Weighing Library screen is now displayed.



The New Library Item screen is displayed



To return to the previous screen press the Library button  again.

To add a Library record, press the button corresponding to the icon .

Press the button corresponding to the icon



to enter PN by using the alphanumeric keypad.

Press the button corresponding to the icon



again to save the Barcode.

Repeat the process to enter Name, Tare Weight and other values by using the button corresponding to  to move down in the list.

**Note:** Library Names can be 8 characters or less.

Press the button corresponding to the  icon to go back to Library List screen.

### 4.10.2 Retrieving a Library Record

To load a Library record from the home screen

press the  button.

The Weighing Library screen is now displayed.

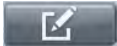
Then press the button corresponding to the icon  to load the Library data and return to the Application mode related to the Library record.



### 4.10.3 Editing a Stored Library Record

To delete a stored record, follow “Retrieving a Library Record” above.

Use the buttons corresponding to the icons  and  to move up and down in the list and highlight the Library item to be edited.

Then press the button corresponding to the icon .

The Edit Library Item screen will be displayed. Make the necessary changes and the press the button corresponding to the icon  to return to the Library List.

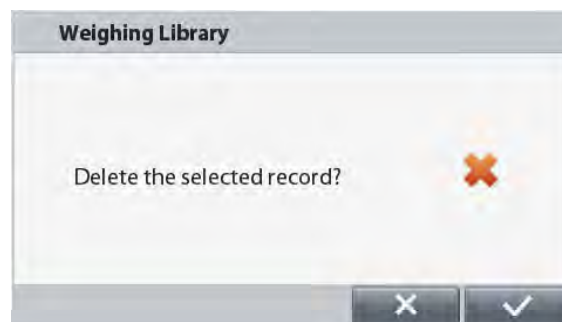


### 4.10.4 Deleting a Stored Library Record

To delete a stored record, follow “Editing a Stored Library Record” above.

Press the button corresponding to the icon . A new screen will be displayed asking for confirmation.

Press the button corresponding to the icon  to delete the record, or press the button corresponding to the icon  to go back to the previous screen.



## 4.11 Additional Features

### 4.11.1 Weigh Below

The Ranger 7000 Scale is equipped with a weigh below hook for weighing below the scale.

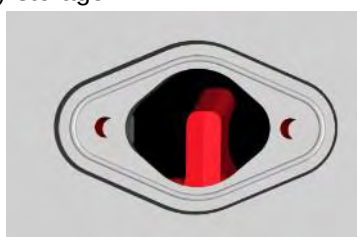


**CAUTION:** Make sure that the scale is properly supported so that it cannot fall or detach during use of the Weigh below feature. Failure to follow these instructions could result in personal injury and damage to the equipment.

To use this feature, remove power from the scale, then remove the protective cover for the weigh below opening (2 screws). The protective cover is reversible for easy storage.



With Cover



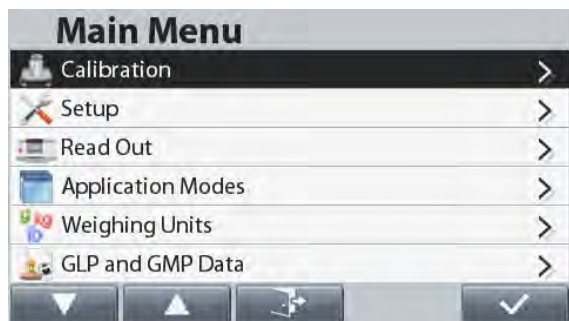
Without Cover

The scale can be supported using lab jacks or any other convenient method. Ensure the scale is level and secure. Power on the Scale, then use an appropriate string or wire to attach items to be weighed.

## 5. MENU SETTINGS

### 5.1 Menu Navigation

To enter the Main Menu, press the  button from any Application Home screen.



### Changing Settings

To change a menu setting, navigate to that setting using the following steps:

#### Enter the Menu

From any Application screen, press the  button.  
The Main Menu List appears on the display.

#### Select the Sub-Menu

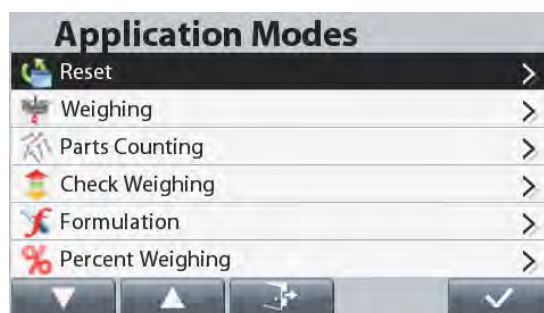
Scroll to the desired Sub-menu in the Main Menu List by using the button corresponding to the icon



. Press the button corresponding to the icon



to display the Sub-menu items.



#### Select the Sub-Menu Item

Scroll to the desired Sub-menu Item using the button corresponding to the icon .  
Press the button corresponding to the icon  to view the Sub-menu item's settings.

Select the Setting.

Scroll to the desired Setting using the button corresponding to the icon .

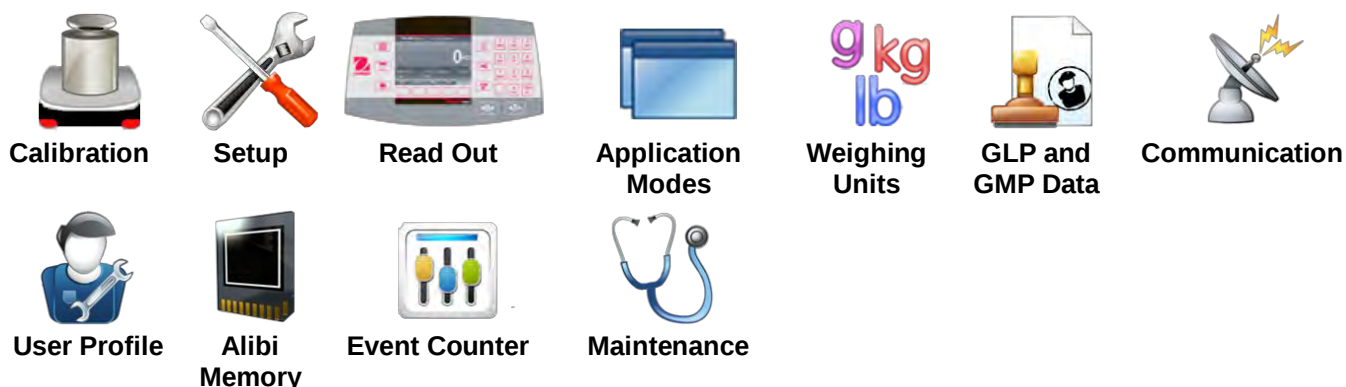
Press the button corresponding to the icon  to select the setting.

Press the  button to return to the previous screen.

Press the  button or the button corresponding to the icon , to exit the menu mode and return to the last active Application mode.

## 5.2 Main Menu

The Main menu selections are illustrated below.



## 5.3 Calibration

R71MD models offer three calibration methods:

Zero Calibration, Span Calibration and Linearity Calibration.

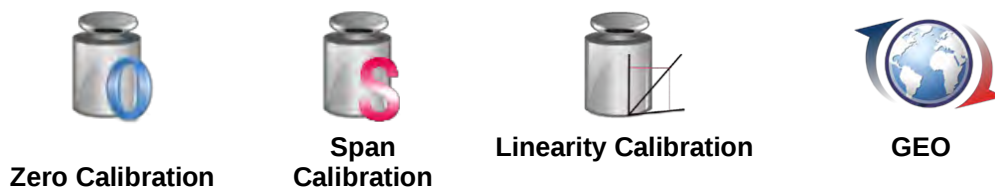
R71MHD models offer 5 calibration methods:

Zero Calibration, Span Calibration, Linearity Calibration, Internal Calibration and Automatic Calibration.

Do not disturb the scale during any calibration.

### 5.3.1 Calibration sub-menu

R71MD models:



R71MHD models:



### 5.3.2 Zero Calibration

Use this calibration method to adjust the zero calibration point, without affecting the span or linearity calibration.

### 5.3.3 Span Calibration

Span calibration uses two calibration points, one at zero load and the other can be chosen by the user by using the numerical keypad.

With the scale turned ON and no load on the pan, start Span Calibration to initiate the procedure. Additional calibration values to be used are shown on the display. The best accuracy is achieved using the mass closest to the full span value.

### 5.3.4 Linearity Calibration

Linearity calibration uses three calibration points, one at zero load and the others at specified loads. Refer to Table 5.1 for Linearity values.

**TABLE 5-1 Calibration Masses**

| Model    | Linearity Calibration Points | Weight Class |         |
|----------|------------------------------|--------------|---------|
| R71MHD3  | 0 kg, 1.5 kg, 3 kg           | ASTM Class 2 | OIML F1 |
| R71MHD6  | 0 kg, 3 kg, 6 kg             | ASTM Class 2 | OIML F1 |
| R71MHD15 | 0 kg, 10 kg, 15 kg           | ASTM Class 2 | OIML F1 |
| R71MHD35 | 0 kg, 20 kg, 35 kg           | ASTM Class 2 | OIML F1 |
| R71MD3   | 0 kg, 1.5 kg, 3 kg           | ASTM Class 5 | OIML M1 |
| R71MD6   | 0 kg, 3 kg, 6 kg             | ASTM Class 5 | OIML M1 |
| R71MD15  | 0 kg, 10 kg, 15 kg           | ASTM Class 5 | OIML M1 |
| R71MD35  | 0 kg, 20 kg, 35 kg           | ASTM Class 5 | OIML M1 |

### 5.3.5 Internal Calibration (R71MHD models)

Calibration is accomplished with the internal calibration mass. Internal calibration can be performed at any time, provided the scale has warmed up to operating temperature and is level.

With the Scale turned ON and no load on the pan, select **Internal Calibration**.  
The Scale begins to calibrate.

The display shows the status, then returns to the current application.

To cancel at any time, press .

### 5.3.6 Automatic Calibration (R71MHD models)

When **Automatic Calibration** is set ON, the scale performs a self-calibration:

- when it senses a temperature change of 1.5°C
- or every 11 hours

AutoCal will automatically calibrate the Scale (using the internal mass) each time there is a change in temperature significant enough to affect accuracy.

**Note: \* Automatic Calibration function is only available in certain regions.**

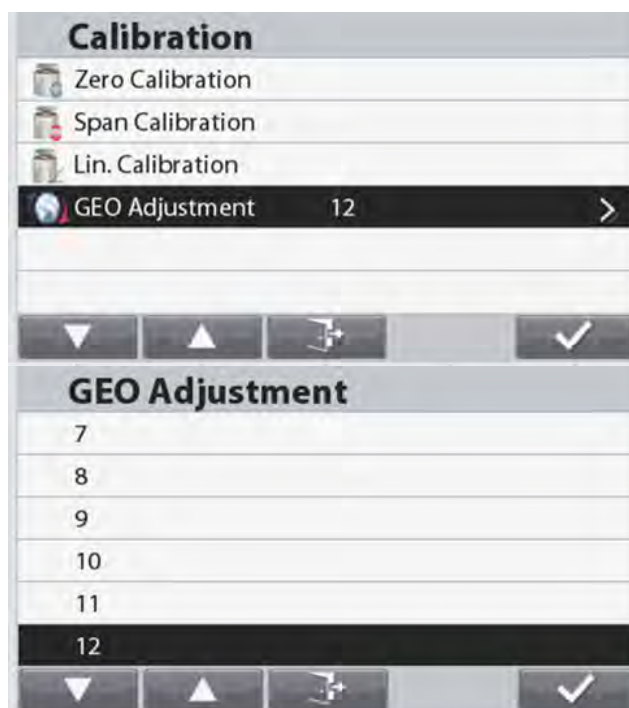
### 5.3.7 GEO Adjustment

Enter this sub-menu to set the GEO values.

Press the button corresponding to the icon  to adjust the GEO value.

Choose the correct GEO value and press the button corresponding to the icon  to confirm.

The values range from 0-31.



**Note:** GEO is only available in R71MD models. See table 9-3 for GEO values.

## 5.4 Setup

Enter this sub-menu to customize Scale display functionality.

### 5.4.1 Scale Setup sub-menu



**Reset**



**Language**



**Power On Unit**



**Key Beep**



**X10Display**



**Barcode Rule**

Factory default settings are shown below in **bold**.



#### 5.4.2 Reset

Reset all settings to factory default settings.



= Reset.



= Do not reset and return to Setup menu screen.



#### 5.4.3 Language

Set the language displayed for menus and displayed messages.

**English**

Spanish

German

French

Italian

Chinese



#### 5.4.4 Power On Unit

Set the unit that will be displayed at Power On.

**Auto**

Kilogram

Pound

Gram

Ounce

Pound:Ounce



#### 5.4.5 Key Beep

Set whether or not the beeper sounds when a button is pressed.

OFF = disabled.

**ON** = enabled.



#### 5.4.6 X10 Display

Set the X10 Display. When ON, the display shows only one decimal point.

OFF = disabled.

**ON** = enabled.

**Note:** When the scale is used in Legal for Trade the setting will be forced to OFF and it will not be changeable.



### 5.4.7 Barcode Rule

The barcode rule validates a scanned barcode number. Two different rules can be set. If both rules are enabled, any barcode that match either rule 1 or rule 2 will be accepted by the scale.

Match Rule 1

**OFF** = disabled.

**ON** = enabled.

Match Rule 2

**OFF** = disabled.

**ON** = enabled.

Example 1:

| Barcode Rule                                                     |       |
|------------------------------------------------------------------|-------|
| Match Rule1                                                      | On >  |
| Rule1                                                            | ..... |
| Match Rule2                                                      | Off > |
|                                                                  |       |
|                                                                  |       |
|                                                                  |       |
| <div> <div>▼</div> <div>▲</div> <div>↺</div> <div>✓</div> </div> |       |

In this example the barcode rule is set to '.....'. This means that any barcode that is 8 characters long will be accepted by the scale, regardless of what the individual characters are.

Example 2:

| Barcode Rule                           |         |
|----------------------------------------|---------|
| Match Rule1                            | On >    |
| Rule1                                  | .....55 |
| Match Rule2                            | Off >   |
|                                        |         |
|                                        |         |
|                                        |         |
| <div> <div>✕</div> <div>✓</div> </div> |         |

In this example the barcode rule is set to '.....55'. This means that any barcode that is 7 characters long and ending with the numbers '55' will be accepted by the scale.

**Note:** The barcode rule is only functional when connecting a barcode scanner through the USB host. Please refer to the barcode scanner manual for supported barcode types.

The barcode will be stored as PN (Part Number) in the library. The maximum length of the barcode (PN) is 30 characters.

## 5.5 Read Out

Enter this sub-menu to customize Scale display functionality.

### Scale Read Out sub-menu



**Reset**



**Stability**



**Zero Range**



**Filter Level**



**Auto Zero Tracking**



**Brightness**



**Auto Dim (minutes)**



**Auto Sleep (minutes)**

Factory default settings are shown below in bold.



#### 5.5.1 Reset

Reset all settings to factory default settings.

Yes = Reset.

No = Do not reset and return to Read Out menu screen.



#### 5.5.2 Stability

Set the amount the reading can vary while the stability symbol remains on.

0.5 Division = 0.5 graduations

**1 Division** = 1 graduation

2 Division = 2 graduations

5 Division = 5 graduations

**Note:** The setting is forced and locked to 1 Division when the Security Switch is set to the locked position.



#### 5.5.3 Zero Range

Set the percentage of scale capacity that may be zeroed.

2%

**10%**

**Note:** The setting is forced and locked to 2% when the Security Switch is set to the locked position.



#### 5.5.4 Filter level

Set the amount of signal filtering.

LOW = faster stabilization time with less stability.

**MEDIUM** = normal stabilization time with normal stability.

HIGH = slower stabilization time with more stability.

**Note:** The setting is at the current setting when the Security Switch is set to the locked position.



### 5.5.5 Auto Zero Tracking

Set the automatic zero tracking functionality.

|                     |                                                                     |
|---------------------|---------------------------------------------------------------------|
| OFF                 | = disabled.                                                         |
| <b>0.5 Division</b> | = display maintains zero up to a drift of 0.5 graduation per second |
| 1 Division          | = display maintains zero up to a drift of 1 graduation per second.  |
| 3 Division          | = display maintains zero up to a drift of 3 graduations per second. |

**Note:** The setting is forced and locked to 0.5 Division when the Security Switch is set to the locked position.



### 5.5.6 Brightness

Set the display brightness using the numerical keypad.

20...**80**...100



### 5.5.7 Auto Dim (minutes)

Set whether the display dims after x seconds/minutes.

**OFF** = disabled.  
1...30 (minutes)



### 5.5.8 Auto Sleep (minutes)

Set whether the display enters sleep mode after x seconds/minutes.

**OFF** = disabled.  
1...100 (minutes)

## 5.6 Application Mode

Enter this sub-menu to enable or disable the desired Scale Applications. Only one application can be running at a time.

**Note:** The use of each Application is described in detail in Section 4.

### 5.6.1 Turning an Application ON/OFF



Highlight the application by pressing the buttons   corresponding to the icons and then press the button corresponding to the icon  to enter the selected submenu.

In the Item option screen, enter the **Enabled** menu to turn it on or off.

Once an Application is enabled (turned on) it may be chosen by pressing the **Applications** button until it's icon appears in the upper left corner of the home screen. The current menu item status is shown: **OFF** = disabled, **ON** = enabled

## 5.7 Weighing Units

Enter this sub-menu to activate the desired units of measure.

**Note:** Due to national laws, the scale may not include some of the units of measure listed.

### 5.7.1 Units Sub-menu



**Notes:** The setting is locked when the Security Switch is set to the locked position.

### 5.7.2 Reset

To reset the unit settings to factory default settings select Reset and then confirm either Yes or No.

### 5.7.3 Turning a Unit ON/OFF

Select the desired unit, then press the button corresponding to the icon and then choose either On or Off.

The current menu item status is shown.

OFF = disabled

ON = enabled

| Weighing Units |          |      |
|----------------|----------|------|
|                | Reset    | >    |
|                | Kilogram | On > |
|                | Pound    | On > |
|                | Gram     | On > |
|                | Ounce    | On > |
|                | Lb:Oz    | On > |
|                |          |      |
|                |          |      |

## 5.8 GLP and GMP Data

Enter this menu to set the Good Laboratory Practices (GLP) and Good Manufacturing Practice data.



### GLP Data Sub-menu



#### 5.8.1 Reset

Resets the settings to factory default settings. Reset the settings to factory default settings.



#### 5.8.2 Date Format

Set the scale date format.

MMDDYYYY = Month Day Year (default)

DDMMYYYY = Day Month Year

YYYYMMDD = Year Month Day



#### 5.8.3 Date

Set the current date using the alphanumeric keypad.



#### 5.8.4 Time Format

Set the scale time format.

24H = 24 hour format (default)

12H = 12 hour format

**5.8.5 Time**

Set the current time.

**5.8.6 Project ID**

Set the project ID by using the alphanumeric keypad.

**5.9 Communication**

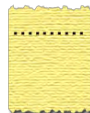
Enter this menu to define external communication methods and to set printing parameters.

Data may be output to either a printer or PC (see section 6.5 for output string).

Factory default settings are shown in bold.

**Communication Sub-menu****RS232****USB**

Choosing an item brings up another menu level (RS232 shown):

**Configuration****Print Setup**

Choosing an item brings up yet another menu level, the device settings are dependent on the COM chosen (RS232 shown)

**Configuration Menu: (RS232 shown)****5.9.1 Reset**

Resets the settings to factory default settings. Reset the settings to factory default settings.

**5.9.2 Baud Rate**

Set the baud rate (bits per second).

300  
600  
1200  
2400  
4800  
**9600**  
19200

**5.9.3 Parity**

Set the data bits and parity.

7 EVEN = 7 data bits, even parity  
7 ODD = 7 data bits, odd parity  
7 NONE = 7 data bits, no parity  
**8 NONE = 8 data bits, no parity**

**5.9.4 Stop Bits**

Set the stop bits.

**1 BIT**  
2 BIT

**5.9.5 Handshake**

Set the flow control method.

- NONE** = no handshaking  
**XON/XOFF** = XON/XOFF handshaking  
**HARDWARE** = hardware handshaking (COM1 menu only)

**5.9.6 Alternate Command**

Enter this sub-menu to set a different command character for the P (Print), T(Tare) or Z(Zero)

**Alternate Print Command**

Set the alternate command character for Print.

Settings of A(a) to Z(z) are available, except T&Z. The default setting is **P**.

**Alternate Tare Command**

Set the alternate command character for Tare.

Settings of A(a) to Z(z) are available, except P&Z. The default setting is **T**.

**Alternate Zero Command**

Set the alternate command character for Zero.

Settings of A(a) to Z(z) are available, except P&T. The default setting is **Z**.

**Print Setup Menu: (RS232 shown)****5.9.7 Reset**

Resets the settings to factory default settings. Reset the settings to factory default settings.

**5.9.8 Stable Weight Only**

Set the printing criteria.

- OFF** = values are printed immediately, regardless of stability.  
**ON** = values are printed only when the stability criteria are met.

**5.9.9 Auto Print**

Set the automatic printing functionality

- OFF** = disabled  
**ON STABLE** = printing occurs each time the stability criteria are met.  
**INTERVAL** = printing occurs at the defined time interval.  
**CONTINUOUS** = printing occurs continuously.

When ON STABLE is selected, set the time interval using the numeric keypad.

- LOAD** = prints when the displayed load is stable  
**LOAD ZERO** = prints when the displayed load or zero reading is stable.

When INTERVAL is selected, set the time interval using the numeric keypad.

Settings of **1** to 3600 seconds are available.

**Note:** Pressing the print button when INTERVAL has been selected will print the displayed result immediately.



### 5.9.10 Print Template

This sub-menu is used to define the format of the data output to a printer or computer.

Simple = only prints result and unit

**Standard** = prints result, tare, mode, unit, GMP, PN, Lib, ID, name

Custom 1 = customized printout format. If not customized, Simple template will be used

Custom 2 = customized printout format. If not customized, Simple template will be used

Custom 3 = customized printout format. If not customized, Simple template will be used

Custom 4 = customized printout format. If not customized, Simple template will be used

Custom 5 = customized printout format. If not customized, Simple template will be used

Example (Standard Template):



### 5.9.11 Edit Template

This sub-menu is used to edit the Print templates.

**Note:** Only the Custom templates can be edited.

**Simple**

Standard

Custom1

Custom2

Custom3

Custom4

Custom5

Each item in the content on the left side can be switched On/Off. The right side will show all the enabled items.

The content for the templates includes:

Header (5 header lines) , User ID, Project ID, Scale No., Date & Time, PN, Result, Gross, Net, Tare, Mode, Unit, Info (i.e. reference weight, check limits), Accu, Library ID, Library Name, Alibi Record(6 digits, i.e. 000235), Footer (2 footer lines).

The item Header, Footer, Date/Time, User ID, Project ID and Scale NO have selections "Off, Single, Continuous". Single means that the related item will be printed out only one time after power on or the related menu setting changed. Continuous means that the related item will be printed out at each print out.

The item Accumulation has selections "Off, Result, All". Result means that only the total weight/PCS will be printed out. All means that all the accumulated information as well as statistical information will be printed out.

See section 6.6 for sample printouts.



### 5.9.12 Line Feed

Set the paper feed

**1 Line** = move the paper up one line after printing.

4 Line = move the paper up four lines after printing.

FORM = a form feed is appended to the output.



### 5.9.13 Data Transfer

Output weighing results directly to a PC application. Setup is easy and no additional software is required.

**Note:** Data Transfer Function is not supported in Windows® 7. OHAUS provides SPDC software for Windows 7 users. Please download from below link:

**OFF** = do not print.  
**ON** = print the specified settings.

Click the Start Menu in Windows XP system and click “Settings” → open **Control Panel**.

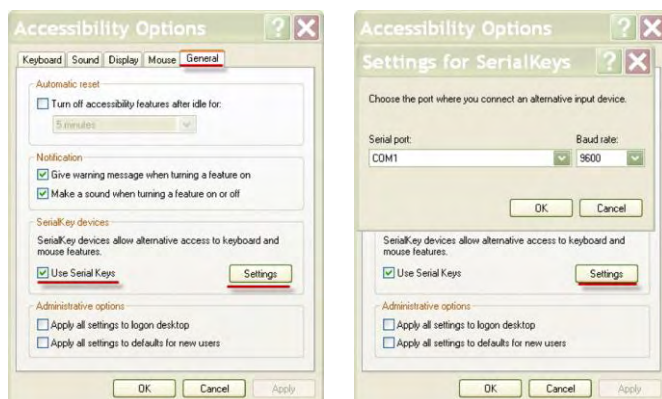
Double click **Accessibility Options** in Control Panel.



Select the **General** tab in Accessibility Options.

Check **Use Serial Keys**, and click the **Settings** button.

Select the **Serial Port**, and set the **Baud rate** to **9600**.



After selecting, click **OK** to close setting for serial keys. Close the Control Panel.

Run Excel® to open one blank sheet. Click on the cell where the data is to be placed. At this time, if the scale sends data to the PC through the RS232 port, the data will be put into the cell, and the cursor will automatically move to the next vertical cell.

**Note:** If the weighing value is a negative number, set the target cell in TEXT format. Otherwise, Excel will not distinguish it as a negative number.

## 5.10 User Profiles

Create users with user name and password.

## User Screen

| User Profiles |      |              |
|---------------|------|--------------|
| No.           | User | Authority    |
| 01            | 668  | Aministrator |

## Functions

1. The User profile is used for saving user specific parameters in menu
2. Total 50 user profiles can be saved in file system
3. User name max length: 12
4. Password max length: 6

## User authorities

1. User types
  - a) Administrator
  - b) Power user
  - c) Guest

**Notes:** Only one Administrator user  
The first user is always Administrator  
If no user have been created, login as Administrator.

**Administrator Account:**

Only the Administrator user can create, delete and edit other users and itself. If an administrator user is deleted, all the power users will also be deleted.

### Power User Account:

The Power user can only modify the menu settings but cannot create, delete or edit other users or itself.

**Guest Account:**

Login as a Guest user will occur directly when pressing the button corresponding to the icon , no password is required.

The Guest user can view but cannot modify the general menu settings. All the menus are locked. The Guest user can modify the app configurations but cannot add/edit library records.

## Login Screen

Long press the  button to start the User login screen to change the user. Login is also required during power up.



To login as Administrator press the button corresponding to the icon . A login screen is displayed with a password field. Enter the password associated with the account.

If the wrong password is entered, an error screen will be displayed. Press the button corresponding to the icon  to return to the login screen.

To login as guest press the button corresponding to the icon .

**Note:** if no user was created, no login is required and automatically login as administrator.

## 5.11 Alibi Memory

**Note:** This menu is only visible if the Alibi memory hardware option has been installed.

Alibi memory is used to store the weight history for reference.

Each Alibi record contains a Record ID, Net Weight value, Tare value and Date & Time.

Enter the Check Records menu item to review the records.

### Notes:

The maximum number of record is 262112.  
When the memory is full and another record is stored the first record will automatically be deleted. At this time a warning message will appear, asking for the user's confirmation.



The latest record is always displayed on top.  
Use the buttons corresponding to the icons and to move up and down the list.

Press the button corresponding to the icon  to locate a record by entering its ID No.

Press the button corresponding to the icon  to print a range of records.

Press the button corresponding to the icon  to return to previous menu.

| Alibi Memory Records |        |       |                  |          |
|----------------------|--------|-------|------------------|----------|
| No.                  | Weight | Tare  | Date/Time        | Platform |
| 1                    | 1.10g  | 0.00g | 01/01/2013 00:01 | 1        |
| 2                    | 50g    | 34.5g | 01/01/2013 00:05 | 1        |

**Note:** Only stable weight can be printed to the Alibi memory.

## 5.12 Event Counter

For jurisdictions that use the audit trail sealing method, the local weights and measures official or authorized service agent must record the current configuration and calibration event counter values at the time of sealing. These values will be compared to values found during a future inspection.

**Note:** A change to an event counter value is equivalent to breaking a physical seal.

The audit trail uses two event counters to record changes to configuration and calibration settings.

- The configuration event counter (CFG) will index by 1 when exiting the menu if one or more of the following menu settings are changed: Zero Range, Stable Range, Auto Zero Tracking (AZT), Units (kg, g, oz, lb or lb:oz) or Stable Only.
- The calibration event counter (CAL) will index by 1 when exiting the menu if a Span Calibration or GEO setting change is made. Note that the counter only indexes once, even if several settings are changed.

## 5.13 Maintenance



**Export  
Library**



**Export User  
Profile**



**Import  
Library  
Drives**



**Import User  
Profile**

**Note:** The import/export is only functional when the current user is administrator.

### Maintenance Sub-menu



#### 5.13.1 Export Library

Export Library to USB flash drive.



#### 5.13.2 Export User Profile

Export User Profile to USB flash drive.



#### 5.13.3 Import Library Drives

Import Library from USB flash drive.



#### 5.13.4 Import User Profile

Import User Profile from USB flash drive.

**Note:** The existing users will be replaced when importing users.

## 6. SERIAL COMMUNICATION

### 6.1 Interface Commands

Commands listed in the following table will be acknowledged by the scale.

| Command      | Function                                                                                                                                                             |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP           | Immediate Print of displayed weight (stable or unstable).                                                                                                            |
| P            | Print displayed weight (stable or unstable).                                                                                                                         |
| CP           | Continuous                                                                                                                                                           |
| SP           | Print on Stability.                                                                                                                                                  |
| xS           | 0S: Turn off "Stable Only" menu item and allow unstable print. 1S: Turn on "Stable Only" menu item and only print stable print.                                      |
| xP           | Interval Print x = Print Interval (1-3600 sec), 0P turns auto print OFF                                                                                              |
| Z            | Same as pressing Zero Key.                                                                                                                                           |
| T            | Same as pressing Tare Key.                                                                                                                                           |
| xT           | Download Tare value in grams (positive values only). Sending 0T clears tare (if allowed).                                                                            |
| PU           | Print current unit: g, kg, lb, oz, lb:oz, t                                                                                                                          |
| xU           | Set scale to unit x: 1=g, 2=kg, 3=lb, 4=oz, 5=lb:oz, 6=t                                                                                                             |
| xM           | Set scale to mode x. 1=Weighing, 2=Counting, 3=Check, 4=Formulation, 5=Percent, 6=Filling, 7=Dynamic, 8=Density, 9=Differential. M will scroll to next enabled mode. |
| PV           | Version: print name, software revision and LFT ON (if LFT is set ON).                                                                                                |
| H x y "text" | Enter Header line, where x = print template number 1 to 5, y = line number 1 to 5, "text" = header text up to 40 alphanumeric characters                             |
| F x y "text" | Enter Footer line, where x = print template number 1 to 5, y = line number 1 to 2 "text" = footer text up to 40 alphanumeric characters.                             |
| \EscR        | Global reset to reset all menu settings to the original factory defaults.                                                                                            |
| SNS x        | Switch the platform: x = 1, 2                                                                                                                                        |
| Notes:       | The second commands listed are "legacy" commands, which maintain compatibility with older products.                                                                  |

### 6.2 RS232 Interface

RS232 (DB9) Pin Connections:

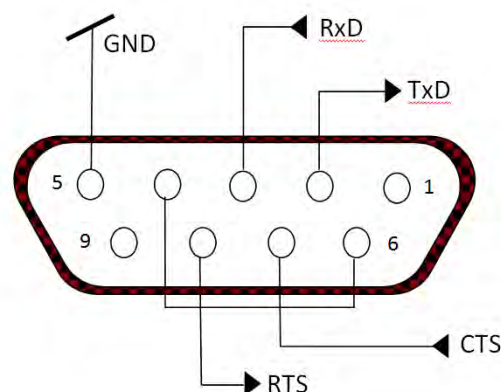
Pin 2: Scale transmit line (TxD)

Pin 3: Scale receive line (RxD)

Pin 5: Ground signal (GND)

Pin 7: Clear to send (hardware handshake) (CTS)

Pin 8: Request to send (hardware handshake) (RTS)



Use the built-in RS-232 Port to connect either to a computer or a printer.

#### 6.2.1 Connecting to a Computer

Connect to the computer with a standard (straight-through) serial cable.

Use HyperTerminal or a similar terminal software to test communication with the computer.

Set up HyperTerminal as follows:

Choose New Connection, "connect using" COM1 (or available COM port).

Select Baud=9600; Parity=8 None; Stop=1; Handshaking=None. Click OK.

Choose Properties/Settings, then ASCII Setup. Check boxes as illustrated:

(Send line ends...; Echo typed characters...; Wrap lines...)

Verify communication by pressing the Print button. If HyperTerminal is set up properly, the value on the display will be displayed in the window.

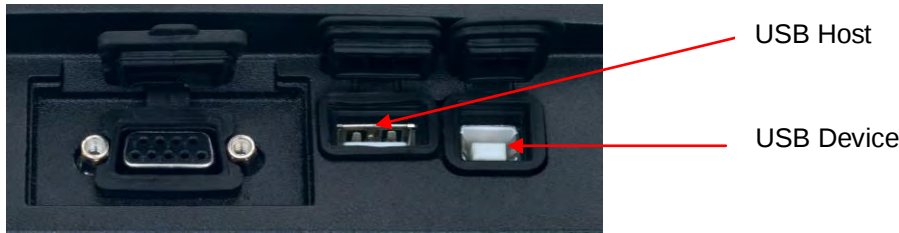
#### 6.2.2 Connecting to a Serial Printer

Connect the cable supplied with the printer to the scale's RS-232 port.

Make sure that the balance and printer communication settings match.

Test communication with the printer by pressing the Print button. If the balance and printer are set up properly, the value on the display will be printed.

### 6.3 The USB Device Interface



The Ohaus USB Device Interface is a unique solution to the problem of connecting a scale to a computer using a Universal Serial Bus (USB). USB devices are categorized into classes such as disk drives, digital cameras, printers, etc. Scales do not have a commonly used class so the Ohaus USB interface uses a generic interface based on the RS232 serial standard.

Data sent from the scale to a computer is in USB format. The USB data is directed to a *virtual port*. This port then appears as an RS232 port to the application program.

When sending a command from a computer to the scale, the application program sends a command to the *virtual port* as if it were an RS232 port. The computer then directs the command from the *virtual port* to the computer's USB connector where the scale is connected. The port receives the USB signal and reacts to the command.

The USB Interface includes a CD with the software drivers to create the required *virtual port* on the computer.

#### 6.3.1 System Requirements

- PC running Windows 98, Windows 98SE, Windows ME, Windows 2000, Windows XP or Windows 7
- Available USB port (Type A, 4-pin, female)

#### 6.3.2 USB Connection

The scale's USB port terminates with a 4-pin, female, USB Type B connector.

A USB Cable (type B/male to type A/male) is required (not supplied).

1. Ensure that the scale is powered on and working properly.
2. Power on the computer and verify that its USB port is enabled and working properly.
3. Plug the cable's USB connectors into the computer's USB port and the scale's USB port. Windows should detect a USB device and the New Hardware Wizard will be initialized.

### 6.3.3 Virtual Port Software Installation

1. Insert the supplied CD into the computer's CD drive.

Different versions of Windows have slightly different steps to load the driver that is on the CD. In all versions the New Hardware Wizard guides you through the required steps to select the driver that is located on the CD.

2. After clicking Finish, the virtual port should be ready for use.

Windows typically adds the virtual port in sequence after the highest number COM port. For example, on PC's equipped with up to 4 COM ports, the virtual port will be COM5.

When using the USB interface with programs that limit the number of COM port designations (e.g. Ohaus MassTracker allows only COM1, 2, 3, & 4), it may be necessary to assign one of these port numbers to the new virtual port.

This can be done in the Port Settings of the Device Manager utility, found in the Windows Control Panel.



Example of Windows XP Hardware Wizard

## 6.4 USB Host

The USB Host can be used to connect a keyboard, barcode scanner and USB flash drive to the Ranger 7000.

## 6.5 Printout Format

Printout string for g, kg, lb, oz units:

| Field  | Weight | Space | Unit | Space | Stability | Space | G/N | Space | Message | Term.Char(s) |
|--------|--------|-------|------|-------|-----------|-------|-----|-------|---------|--------------|
| Length | 9      | 1     | 3    | 1     | 1         | 1     | 1   | 1     | 5       | 2            |

- The printout string has a fixed length of 23 characters.
- Each Space field is a delimiting space used to separate the other fields.
- The Weight field is 9 right justified characters. If the value is negative, the '-' character is printed at the immediate left of the most significant digit.
- The Unit/Mode field is 3 left justified characters.
- The Stability field is 1 character.
- The G/N field is 1 character. 'G' is printed for a gross weight. 'N' is printed for a net weight.
- The Message field is 5 left justified characters.

**Note:** The Termination Characters Carriage Return and Line Feed are appended to the printout.

Printout string for the lb:oz unit

| Field  | Weight1 | Space | Unit1 | Space | Weight2 | Space | Unit2 | Space | Stability | Space | G/N | Space | Message | Term.Char(s) |
|--------|---------|-------|-------|-------|---------|-------|-------|-------|-----------|-------|-----|-------|---------|--------------|
| Length | 4       | 1     | 2     | 1     | 7       | 1     | 2     | 1     | 1         | 1     | 1   | 1     | 5       | 2            |

- The printout string has a fixed length of 28 characters.
- Each Space field is a delimiting space used to separate the other fields.
- The Weight1 field is 4 right justified characters. If the value is negative, the '-' character is located at the immediate left of the most significant digit.
- The Unit1 field is 2 left justified characters.
- The Weight2 field is 7 right justified characters.
- The Unit2 field is 2 left justified characters.
- The Stability field is 1 character. A space is printed if the weight value is stable. A '?' is printed if the weight value is not stable.
- The G/N field is 1 character. 'G' is printed for a gross weight. 'N' is printed for a net weight.
- The Message field is 5 left justified characters.

**Note:** The Termination Characters Carriage Return and Line Feed are appended to the printout.

## 6.6 Printout Examples

| Weighing            | Description  | Enabled |
|---------------------|--------------|---------|
| Company Name        | Header 1     | ✓       |
| Address 1           | Header 2     | ✓       |
| Address 2           | Header 3     | ✓       |
| Address 3           | Header 4     | ✓       |
| Address 4           | Header 5     | ✓       |
| Scale ID: 123       | User ID      |         |
| 03:57 PM 09/11/2013 | Project ID   |         |
| 0.79300 kg N        | Scale ID     | ✓       |
| 1.36275 kg G        | Date & Time  | ✓       |
| 0.79300 kg N        | PN           |         |
| 0.56975 kg T        | Result       | ✓       |
| Mode: Weighing      | Gross        | ✓       |
| Signature_____      | Net          | ✓       |
| Verified by_____    | Tare         | ✓       |
|                     | Mode         | ✓       |
|                     | Unit         | ✓       |
|                     | Information  |         |
|                     | Accumulate   |         |
|                     | Library ID   |         |
|                     | Library Name |         |
|                     | Alibi Record |         |
|                     | Footer 1     | ✓       |
|                     | Footer 2     | ✓       |

| Parts Counting      | Description  | Enabled |
|---------------------|--------------|---------|
| Company Name        | Header 1     | ✓       |
| Address 1           | Header 2     | ✓       |
| Address 2           | Header 3     | ✓       |
| Address 3           | Header 4     | ✓       |
| Address 4           | Header 5     | ✓       |
| Scale ID: 123       | User ID      |         |
| 03:58 PM 09/11/2013 | Project ID   |         |
| PN: 80251234        | Scale ID     | ✓       |
| 1125 PCS N          | Date & Time  | ✓       |
| 2725 PCS G          | PN           | ✓       |
| 1125 PCS N          | Result       | ✓       |
| 0.56975 kg T        | Gross        | ✓       |
| Mode: Counting      | Net          | ✓       |
| APW: 0.356094 g     | Tare         | ✓       |
| Library ID: 1       | Mode         | ✓       |
| Library Name: Screw | Unit         | ✓       |
| Signature_____      | Information  | ✓       |
| Verified by_____    | Accumulate   |         |
|                     | Library ID   | ✓       |
|                     | Library Name | ✓       |
|                     | Alibi Record |         |
|                     | Footer 1     | ✓       |
|                     | Footer 2     | ✓       |

| Filling           | Description  | Enabled |
|-------------------|--------------|---------|
| Company Name      | Header 1     | ✓       |
| Address 1         | Header 2     | ✓       |
| Address 2         | Header 3     | ✓       |
| Address 3         | Header 4     | ✓       |
| Address 4         | Header 5     | ✓       |
| User ID: USER1    | User ID      | ✓       |
| Project ID: P123  | Project ID   | ✓       |
| 1793.00 g N       | Scale ID     |         |
| Mode: Filling     | Date & Time  |         |
| Target: 1800.00 g | PN           |         |
| SP1: 1700.00 g    | Result       | ✓       |
| SP2: 1790.00 g    | Gross        |         |
|                   | Net          |         |
|                   | Tare         |         |
|                   | Mode         | ✓       |
|                   | Unit         | ✓       |
|                   | Information  | ✓       |
|                   | Accumulate   |         |
|                   | Library ID   |         |
|                   | Library Name |         |
|                   | Alibi Record |         |
|                   | Footer 1     |         |
|                   | Footer 2     |         |

| Density                      | Description  | Enabled |
|------------------------------|--------------|---------|
| Company Name                 | Header 1     | ✓       |
| Address 1                    | Header 2     | ✓       |
| Address 2                    | Header 3     | ✓       |
| Address 3                    | Header 4     | ✓       |
| Address 4                    | Header 5     | ✓       |
| User ID: USER1               | User ID      | ✓       |
| Project ID: P125             | Project ID   | ✓       |
| Scale ID: S21                | Scale ID     | ✓       |
| 04:58 PM 09/11/2013          | Date & Time  | ✓       |
| 18.058 g/cm3                 | PN           |         |
| Mode: Density                | Result       | ✓       |
| Weight in air: 1001.70 g     | Gross        |         |
| Weight in liquid: 946.35 g   | Net          |         |
| Auxiliary liquid: Water      | Tare         |         |
| Water Temp.: 20.0 °C         | Mode         | ✓       |
| Liquid Density: 0.9982 g/cm3 | Unit         | ✓       |
|                              | Information  | ✓       |
|                              | Accumulate   |         |
|                              | Library ID   |         |
|                              | Library Name |         |
|                              | Alibi Record |         |
|                              | Footer 1     |         |
|                              | Footer 2     |         |

**Formulation (Recipe)**

Item: 001

PN: 1234

Name: Egg

Formu.Wt: 100.00 g

Actual Wt: 99.60 g

Item: 002

PN: 1235

Name: Water

Formu.Wt: 500.00 g

Actual Wt: 497.95 g

Item: 003

PN: 1236

Name: Sugar

Formu.Wt: 120.00 g

Actual Wt: 124.10 g

Item: 004

PN: 1237

Name: Salt

Formu.Wt: 80.00 g

Actual Wt: 80.85 g

## 7. LEGAL FOR TRADE

When the scale is used in trade or a legally controlled application it must be set up, verified and sealed in accordance with local weights and measures regulations. It is the responsibility of the purchaser to ensure that all pertinent legal requirements are met.

### 7.1 Settings

Before verification and sealing, perform the following steps in order:

1. Verify that the menu settings meet the local weights and measures regulations.
2. Units menu should be reviewed. Verify the units turned on meet the local weights and measures regulations.
3. Perform a calibration as explained in Section 5.
3. Set the position of the Security Switch to the locked position.

### 7.2 Verification

A weights and measures official or authorized service agent must perform the verification procedure.

### 7.3 Sealing

After the scale has been verified, it must be sealed to prevent undetected access to the legally controlled settings. Before sealing the device, ensure that the security switch is in the Locked position and the Legal for Trade setting in the scale Setup menu has been set to ON.

If using a wire seal, pass the sealing wire through the holes in the security screw and tab, as shown.

If using a paper seal, place the seal over the flat head screw as shown

#### A. Base



Un-Locked



Locked with Wire Seal



Locked with Paper Seal

#### B. Terminal



Un-locked



Locked with Wire Seal



Locked with Paper Seal

**Note:** The Terminal only needs to be sealed if a second scale is attached to the optional 2<sup>nd</sup> A/D board.

## 8. MAINTENANCE

### 8.1 Calibration

Periodically verify calibration by placing an accurate weight on the scale and viewing the result. If calibration is required, perform as explained in section 5.

### 8.2 Information

Information is available from any application and is accessed by pressing the  button.

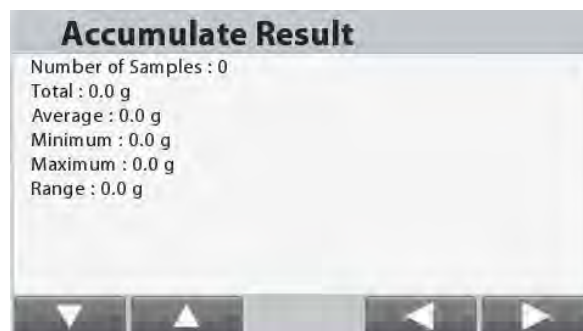
The following data is available for the Application used:

| Application  | Statistics | Accumulation | General Status | Help | Icons Explanation |
|--------------|------------|--------------|----------------|------|-------------------|
| Weighing     | X          | X            | X              | X    | X                 |
| Counting     |            | X            | X              | X    | X                 |
| Percent      |            | X            | X              | X    | X                 |
| Check        |            | X            | X              | X    | X                 |
| Dynamic      |            | X            | X              | X    | X                 |
| Filling      |            | X            | X              | X    | X                 |
| Formulation  |            |              | X              | X    | X                 |
| Differential |            |              | X              | X    | X                 |
| Density      |            |              | X              | X    | X                 |
| Menu/Others  |            |              |                | X    |                   |

Press the  button to enter the **Information** area.

Use the buttons corresponding to the icons  and  to toggle through the various Information screens.

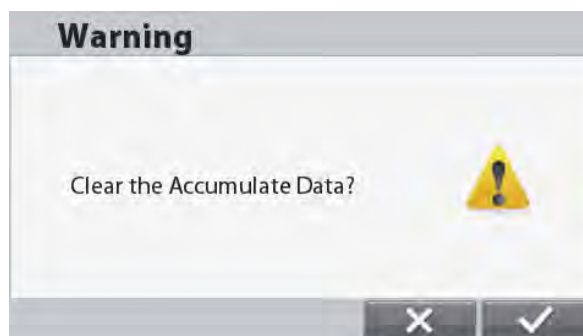
**Note:** To return to Application Home screen from the Information area, press the  button.



To clear data, use the buttons corresponding to the icons  and  to select the item to be cleared, then press the  button.

A warning message appears, press the button corresponding to the  icon to confirm the deletion.

To abort the deletion press the button corresponding to the icon .



### 8.3 Cleaning



Disconnect the Ranger 7000 Scale from the power supply before cleaning.  
Make sure that no liquid enters the interior of the Terminal or Base.

Clean the Scale at regular intervals.

Housing surfaces may be cleaned with a lint-free cloth slightly dampened with water or a mild cleaning agent.

**Attention:** Do not use solvents, harsh chemicals, ammonia or abrasive cleaning agents.

### 8.4 Troubleshooting

TABLE 8-1. TROUBLESHOOTING

| Error Code         | Description                           | Cause                                                                                              |
|--------------------|---------------------------------------|----------------------------------------------------------------------------------------------------|
| EEP Error          | EEPROM Checksum Error                 | Corrupted EEPROM data                                                                              |
| Power on Overload  | Power On Error                        | Weight reading exceeds Power On Zero limit.                                                        |
| Power on Underload | Power On Error                        | Weight reading below Power On Zero limit.                                                          |
| Overload           | Over Range Error                      | Weight reading exceeds Overload limit.                                                             |
| Underload          | Under Range Error                     | Weight reading below Underload limit.                                                              |
| Tare Error         | Tare out of range Error               | Tared at one unit but after switching to another unit the tare value exceeds the maximum.          |
| Display Overflow   | Display Overflow                      | Weight exceeds 6 digits.                                                                           |
| No Calibration     | Calibration data error                | Calibration data does not exist.                                                                   |
| -----              | Busy message                          | Displayed during tare setting, zero setting, printing                                              |
| --NO--             | Action not allowed message            | Function not executed.                                                                             |
| Calibration Error  | Calibration Error                     | Calibration value outside allowable limits                                                         |
| Low Reference      | Low reference weight warning message  | Average Piece Weight too small. (Warning)                                                          |
| Reference Error    | Unacceptable reference weight message | Reference Weight too small. The weight on the pan is too small to define a valid reference weight. |

### 8.5 Service Information

If the troubleshooting section does not resolve your problem, contact an Authorized Ohaus Service Agent. Please visit our website [www.ohaus.com](http://www.ohaus.com) to locate the Ohaus office nearest you. An Ohaus Product Service Specialist will be available to assist you.

### 8.6 Software Updates

Ohaus is continuously improving its scale software. To obtain the latest release, please contact your Authorized Ohaus Dealer or Ohaus Corporation.

## 9. TECHNICAL DATA

### 9.1 Specifications

#### Ambient conditions

- Indoor use only
- Altitude: Up to 2000 m
- Specified Temperature range: 10 °C to 30 °C (R71MHD3/6/15/35 models)  
-10 °C to 40 °C (R71MD3/6/15/35 models)
- Humidity: maximum relative humidity 80 % for temperatures up to 30 °C  
decreasing linearly to 50 % relative humidity at 40 °C
- Mains supply voltage fluctuations: up to  $\pm 10$  % of the nominal voltage
- Installation category II
- Pollution degree: 2
- Operability is assured at ambient temperatures between 5 °C to 40 °C.

#### Materials

- Base Housing; die-cast Aluminum, Painted
- Terminal housing: die-cast Aluminum, Painted
- Weighing Pan: 304 Stainless Steel

TABLE 9-1. SPECIFICATIONS

| MODEL                                   | R71MHD3                                                                                                                            | R71MHD6  | R71MHD15                                    | R71MHD35 |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------|----------|
| Capacity                                | 3000 g                                                                                                                             | 6000 g   | 15000 g                                     | 35000 g  |
| Readability d                           | 0.01 g                                                                                                                             | 0.02 g   | 0.1 g                                       | 0.1 g    |
| Approved Readability e                  | 0.1 g                                                                                                                              | 0.2 g    | 1 g                                         | 1 g      |
| Repeatability (std. dev.)               | 0.01 g                                                                                                                             | 0.02 g   | 0.1 g                                       | 0.1 g    |
| Linearity                               | ± 0.02 g                                                                                                                           | ± 0.04 g | ± 0.2 g                                     | ± 0.2 g  |
| Weighing units                          | gram, kilogram, ounce, pound, pound:ounce, tonne                                                                                   |          |                                             |          |
| Applications                            | Weighing, Parts Counting, Percent Weighing, Check Weighing, Dynamic Weighing, Filling, Formulation, Differential Weighing, Density |          |                                             |          |
| Stabilization time (typical)            | Within 1 second                                                                                                                    |          |                                             |          |
| Safe overload protection                | 150 % of Capacity                                                                                                                  |          |                                             |          |
| Display                                 | TFT Graphic LCD                                                                                                                    |          |                                             |          |
| Display size                            | 4.3 inch                                                                                                                           |          |                                             |          |
| Backlight                               | White LED                                                                                                                          |          |                                             |          |
| Communication                           | RS-232, USB                                                                                                                        |          |                                             |          |
| Power supply                            | Power Input: 100-240 V~ 0.5 A 50/60 Hz                                                                                             |          |                                             |          |
| Platform size                           | 240 x 240 mm<br>9.4 x 9.4 inch                                                                                                     |          | 377 x 311 mm<br>14.8 x 12.2 inch            |          |
| Terminal Housing dimensions (W x D x H) | 267 x 118 x 72 mm<br>10.5 x 4.6 x 2.8 inch                                                                                         |          |                                             |          |
| Base Housing dimensions (W x D x H)     | 280 x 280 x 114 mm<br>11 x 11 x 4.5 inch                                                                                           |          | 377 x 311 x 128 mm<br>14.9 x 12.2 x 5 inch  |          |
| Assembled dimensions (W x D x H)        | 280 x 420 x 114 mm<br>11 x 11 x 4.5 inch                                                                                           |          | 377 x 467 x 128 mm<br>14.9 x 18.4 x 5 inch  |          |
| Net weight                              | 7.2 kg / 16 lb                                                                                                                     |          | 10.9 kg / 24 lb                             |          |
| Shipping weight                         | 9.2 kg / 20.3 lb                                                                                                                   |          | 14.4 kg / 31.7 lb                           |          |
| Shipping dimension                      | 605 x 405 x 244 mm<br>23.8 x 15.9 x 9.6 inch                                                                                       |          | 665 x 525 x 330 mm<br>26.2 x 20.7 x 13 inch |          |

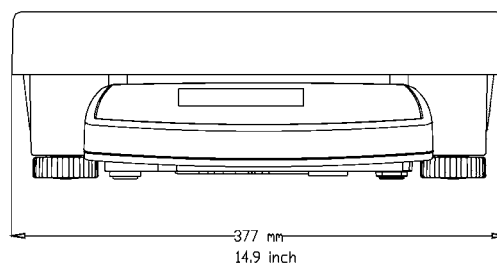
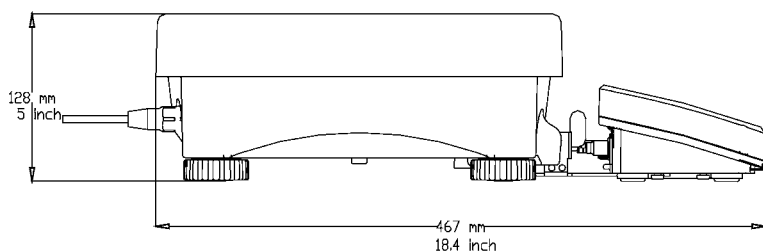
TABLE 9-2. SPECIFICATIONS (continued)

| MODEL                                      | R71MD3                                                                                                                             | R71MD6  | R71MD15                                     | R71MD35 |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------|---------|
| Capacity                                   | 3000 g                                                                                                                             | 6000 g  | 15000 g                                     | 35000 g |
| Readability d                              | 0.05 g                                                                                                                             | 0.1 g   | 0.2 g                                       | 0.5 g   |
| Approved Readability e                     | 0.5 g                                                                                                                              | 1 g     | 2 g                                         | 5 g     |
| Repeatability (std. dev.)                  | 0.05 g                                                                                                                             | 0.1 g   | 0.2 g                                       | 0.5 g   |
| Linearity                                  | ± 0.1 g                                                                                                                            | ± 0.2 g | ± 0.4 g                                     | ± 1 g   |
| Weighing units                             | gram, kilogram, ounce, pound, pound:ounce, tonne                                                                                   |         |                                             |         |
| Applications                               | Weighing, Parts Counting, Percent Weighing, Check Weighing, Dynamic Weighing, Filling, Formulation, Differential Weighing, Density |         |                                             |         |
| Stabilization time (typical)               | Within 1 second                                                                                                                    |         |                                             |         |
| Safe overload capacity                     | 150 % of Capacity                                                                                                                  |         |                                             |         |
| Display                                    | TFT Graphic LCD                                                                                                                    |         |                                             |         |
| Display size                               | 4.3 inch                                                                                                                           |         |                                             |         |
| Backlight                                  | White LED                                                                                                                          |         |                                             |         |
| Communication                              | RS-232, USB                                                                                                                        |         |                                             |         |
| Power supply                               | Power Input: 100-240 V~ 0.5 A 50/60 Hz                                                                                             |         |                                             |         |
| Platform size                              | 280 x 280 mm<br>11 x 11 inch                                                                                                       |         | 377 x 311 mm<br>14.8 x 12.2 inch            |         |
| Terminal Housing dimensions<br>(W x D x H) | 267 x 118 x 72 mm<br>10.5 x 4.6 x 2.8 inch                                                                                         |         |                                             |         |
| Base Housing dimensions<br>(W x D x H)     | 280 x 280 x 114 mm<br>9.4 x 9.4 x 4.5 inch                                                                                         |         | 377 x 311 x 128 mm<br>14.9 x 12.2 x 5 inch  |         |
| Assembled dimensions<br>(W x D x H)        | 240 x 420 x 114 mm<br>17.4 x 16.5 x 4.5 inch                                                                                       |         | 377 x 467 x 128 mm<br>14.9 x 18.4 x 5 inch  |         |
| Net weight                                 | 6.8 kg / 15 lb                                                                                                                     |         | 9.9 kg / 21.8 lb                            |         |
| Shipping weight                            | 8.5 kg / 18.7 lb                                                                                                                   |         | 13.4 kg / 29.5 lb                           |         |
| Shipping dimensions                        | 605 x 405 x 244 mm<br>23.8 x 15.9 x 9.6 inch                                                                                       |         | 665 x 525 x 330 mm<br>26.2 x 20.7 x 13 inch |         |

## 9.2 Drawings and Dimensions

### Fully assembled dimensions

#### A. Large base



#### B. Small Base

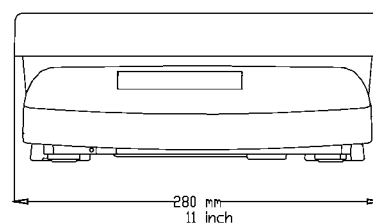
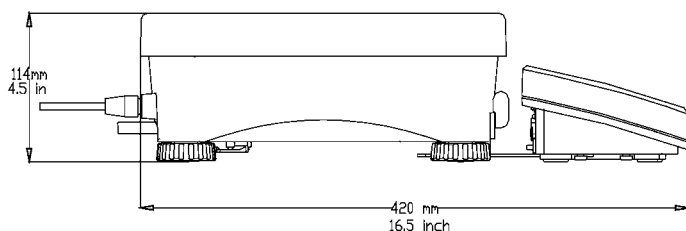


Figure 9-1. Ranger 7000 dimensions

### 9.3 Table of Geo Values

For weighing instruments verified by the manufacturer, the geo value indicates the country or geographical zone for which the instrument is verified. The Geo value set in the instrument (e.g. "Geo 18") appears briefly after switch-on or is specified on a label.

Note: GEO values are only applicable for models R71MD3, R71MD6, R71MD15 and R71MD35

TABLE 9-3. GEO CODES

|          |        | Elevation in meters |      |      |      |      |      |      |      |      |       |       |
|----------|--------|---------------------|------|------|------|------|------|------|------|------|-------|-------|
|          |        | 0                   | 325  | 650  | 975  | 1300 | 1625 | 1950 | 2275 | 2600 | 2925  | 3250  |
|          |        | 325                 | 650  | 975  | 1300 | 1625 | 1950 | 2275 | 2600 | 2925 | 3250  | 3575  |
|          |        | Elevation in feet   |      |      |      |      |      |      |      |      |       |       |
|          |        | 0                   | 1060 | 2130 | 3200 | 4260 | 5330 | 6400 | 7460 | 8530 | 9600  | 10660 |
|          |        | 1060                | 2130 | 3200 | 4260 | 5330 | 6400 | 7460 | 8530 | 9600 | 10660 | 11730 |
| Latitude |        | GEO value           |      |      |      |      |      |      |      |      |       |       |
| 0°00'    | 5°46'  | 5                   | 4    | 4    | 3    | 3    | 2    | 2    | 1    | 1    | 0     | 0     |
| 5°46'    | 9°52'  | 5                   | 5    | 4    | 4    | 3    | 3    | 2    | 2    | 1    | 1     | 0     |
| 9°52'    | 12°44' | 6                   | 5    | 5    | 4    | 4    | 3    | 3    | 2    | 2    | 1     | 1     |
| 12°44'   | 15°06' | 6                   | 6    | 5    | 5    | 4    | 4    | 3    | 3    | 2    | 2     | 1     |
| 15°06'   | 17°10' | 7                   | 6    | 6    | 5    | 5    | 4    | 4    | 3    | 3    | 2     | 2     |
| 17°10'   | 19°02' | 7                   | 7    | 6    | 6    | 5    | 5    | 4    | 4    | 3    | 3     | 2     |
| 19°02'   | 20°45' | 8                   | 7    | 7    | 6    | 6    | 5    | 5    | 4    | 4    | 3     | 3     |
| 20°45'   | 22°22' | 8                   | 8    | 7    | 7    | 6    | 6    | 5    | 5    | 4    | 4     | 3     |
| 22°22'   | 23°54' | 9                   | 8    | 8    | 7    | 7    | 6    | 6    | 5    | 5    | 4     | 4     |
| 23°54'   | 25°21' | 9                   | 9    | 8    | 8    | 7    | 7    | 6    | 6    | 5    | 5     | 4     |
| 25°21'   | 26°45' | 10                  | 9    | 9    | 8    | 8    | 7    | 7    | 6    | 6    | 5     | 5     |
| 26°45'   | 28°06' | 10                  | 10   | 9    | 9    | 8    | 8    | 7    | 7    | 6    | 6     | 5     |
| 28°06'   | 29°25' | 11                  | 10   | 10   | 9    | 9    | 8    | 8    | 7    | 7    | 6     | 6     |
| 29°25'   | 30°41' | 11                  | 11   | 10   | 10   | 9    | 9    | 8    | 8    | 7    | 7     | 6     |
| 30°41'   | 31°56' | 12                  | 11   | 11   | 10   | 10   | 9    | 9    | 8    | 8    | 7     | 7     |
| 31°56'   | 33°09' | 12                  | 12   | 11   | 11   | 10   | 10   | 9    | 9    | 8    | 8     | 7     |
| 33°09'   | 34°21' | 13                  | 12   | 12   | 11   | 11   | 10   | 10   | 9    | 9    | 8     | 8     |
| 34°21'   | 35°31' | 13                  | 13   | 12   | 12   | 11   | 11   | 10   | 10   | 9    | 9     | 8     |
| 35°31'   | 36°41' | 14                  | 13   | 13   | 12   | 12   | 11   | 11   | 10   | 10   | 9     | 9     |
| 36°41'   | 37°50' | 14                  | 14   | 13   | 13   | 12   | 12   | 11   | 11   | 10   | 10    | 9     |
| 37°50'   | 38°58' | 15                  | 14   | 14   | 13   | 13   | 12   | 12   | 11   | 11   | 10    | 10    |
| 38°58'   | 40°05' | 15                  | 15   | 14   | 14   | 13   | 13   | 12   | 12   | 11   | 11    | 10    |
| 40°05'   | 41°12' | 16                  | 15   | 15   | 14   | 14   | 13   | 13   | 12   | 12   | 11    | 11    |
| 41°12'   | 42°19' | 16                  | 16   | 15   | 15   | 14   | 14   | 13   | 13   | 12   | 12    | 11    |
| 42°19'   | 43°26' | 17                  | 16   | 16   | 15   | 15   | 14   | 14   | 13   | 13   | 12    | 12    |
| 43°26'   | 44°32' | 17                  | 17   | 16   | 16   | 15   | 15   | 14   | 14   | 13   | 13    | 12    |
| 44°32'   | 45°38' | 18                  | 17   | 17   | 16   | 16   | 15   | 15   | 14   | 14   | 13    | 13    |
| 45°38'   | 46°45' | 18                  | 18   | 17   | 17   | 16   | 16   | 15   | 15   | 14   | 14    | 13    |
| 46°45'   | 47°51' | 19                  | 18   | 18   | 17   | 17   | 16   | 16   | 15   | 15   | 14    | 14    |
| 47°51'   | 48°58' | 19                  | 19   | 18   | 18   | 17   | 17   | 16   | 16   | 15   | 15    | 14    |
| 48°58'   | 50°06' | 20                  | 19   | 19   | 18   | 18   | 17   | 17   | 16   | 16   | 15    | 15    |
| 50°06'   | 51°13' | 20                  | 20   | 19   | 19   | 18   | 18   | 17   | 17   | 16   | 16    | 15    |
| 51°13'   | 52°22' | 21                  | 20   | 20   | 19   | 19   | 18   | 18   | 17   | 17   | 16    | 16    |
| 52°22'   | 53°31' | 21                  | 21   | 20   | 20   | 19   | 19   | 18   | 18   | 17   | 17    | 16    |
| 53°31'   | 54°41' | 22                  | 21   | 21   | 20   | 20   | 19   | 19   | 18   | 18   | 17    | 17    |
| 54°41'   | 55°52' | 22                  | 22   | 21   | 21   | 20   | 20   | 19   | 19   | 18   | 18    | 17    |
| 55°52'   | 57°04' | 23                  | 22   | 22   | 21   | 21   | 20   | 20   | 19   | 19   | 18    | 18    |
| 57°04'   | 58°17' | 23                  | 23   | 22   | 22   | 21   | 21   | 20   | 20   | 19   | 19    | 18    |
| 58°17'   | 59°32' | 24                  | 23   | 23   | 22   | 22   | 21   | 21   | 20   | 20   | 19    | 19    |
| 59°32'   | 60°49' | 24                  | 24   | 23   | 23   | 22   | 22   | 21   | 21   | 20   | 20    | 19    |
| 60°49'   | 62°09' | 25                  | 24   | 24   | 23   | 23   | 22   | 22   | 21   | 21   | 20    | 20    |
| 62°09'   | 63°30' | 25                  | 25   | 24   | 24   | 23   | 23   | 22   | 22   | 21   | 21    | 20    |
| 63°30'   | 64°55' | 26                  | 25   | 25   | 24   | 24   | 23   | 23   | 22   | 22   | 21    | 21    |
| 64°55'   | 66°24' | 26                  | 26   | 25   | 25   | 24   | 24   | 23   | 23   | 22   | 22    | 21    |
| 66°24'   | 67°57' | 27                  | 26   | 26   | 25   | 25   | 24   | 24   | 23   | 23   | 22    | 22    |
| 67°57'   | 69°35' | 27                  | 27   | 26   | 26   | 25   | 25   | 24   | 24   | 23   | 23    | 22    |
| 69°35'   | 71°21' | 28                  | 27   | 27   | 26   | 26   | 25   | 25   | 24   | 24   | 23    | 23    |
| 71°21'   | 73°16' | 28                  | 28   | 27   | 27   | 26   | 26   | 25   | 25   | 24   | 24    | 23    |
| 73°16'   | 75°24' | 29                  | 28   | 28   | 27   | 27   | 26   | 26   | 25   | 25   | 24    | 24    |
| 75°24'   | 77°52' | 29                  | 29   | 28   | 28   | 27   | 27   | 26   | 26   | 25   | 25    | 24    |
| 77°52'   | 80°56' | 30                  | 29   | 29   | 28   | 28   | 27   | 27   | 26   | 26   | 25    | 25    |
| 80°56'   | 85°45' | 30                  | 30   | 29   | 29   | 28   | 28   | 27   | 27   | 26   | 26    | 25    |
| 85°45'   | 90°00' | 31                  | 30   | 30   | 29   | 29   | 28   | 28   | 27   | 27   | 26    | 26    |

## 9.4 Options

TABLE 9-4. OPTIONS

| DESCRIPTION                                 | PART NUMBER |
|---------------------------------------------|-------------|
| Rechargeable Battery Kit, EX HiCap, R71     | 30041295    |
| Accessory Tower Kit, R71                    | 30095408    |
| Accessory RS232, Kit, R31, RC31, V71, R71   | 30037448    |
| Accessory 2 <sup>nd</sup> Platform Kit, R71 | 30097590    |
| Accessory Discrete I/O, R71                 | 30097591    |
| Accessory Ethernet Kit, R31, RC31, V71, R71 | 30037447    |
| Alibi Memory Kit, T71, R71                  | 80500503    |
| Accessory Extension Cable 9 Meters, R71     | 30101495    |

## 9.5 Button Icons List

TABLE 9-5. BUTTON ICONS

| WEIGHING APPLICATION                                                                |                                                     |                                                                                     |                                          |
|-------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|
| ICON                                                                                | FUNCTION                                            | ICON                                                                                | FUNCTION                                 |
|    | Setup Weighing mode configurations                  |    | Edit selected record (used in Library)   |
|    | Manual Accumulation                                 |    | Recall selected record (used in Library) |
|    | Quit (Used in Library)                              |    | Delete selected record (used in Library) |
|    | Add a record (used in Library)                      |                                                                                     |                                          |
| COUNTING APPLICATION                                                                |                                                     |                                                                                     |                                          |
|    | Setup Counting mode configurations                  |    | Add a record (Used in Library)           |
|   | Set APW (Average Piece Weight) by number of samples |   | Delete selected record (used in Library) |
|  | Enter APW (Average Piece Weight) value directly     |  | Recall selected record (used in Library) |
|  | Manual Accumulation                                 |  | Edit selected record (used in Library)   |
|  | Quit (Used in Library)                              |                                                                                     |                                          |
| CHECK APPLICATION                                                                   |                                                     |                                                                                     |                                          |
|  | Setup Check mode configurations                     |  | Quit (Used in Library)                   |
|  | Change Check limits                                 |  | Add a record (Used in Library)           |
|  | Set APW (Average Piece Weight) by number of samples |  | Delete selected record (used in Library) |
|  | Enter APW (Average Piece Weight) value directly     |  | Recall selected record (used in Library) |
|  | Manual Accumulation                                 |  | Edit selected record (used in Library)   |
|  | Switch the Check Limit's input method               |                                                                                     |                                          |
|                                                                                     |                                                     |                                                                                     |                                          |

TABLE 9-5. BUTTON ICONS (Continued)

| DENSITY APPLICATION                                                                 |                                                        |                                                                                     |                                          |
|-------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|
| ICON                                                                                | FUNCTION                                               | ICON                                                                                | FUNCTION                                 |
|    | Setup Density mode configurations                      |   | Enter liquid density                     |
|    | Accept current weight                                  |    | Start                                    |
|    | Set water temperature                                  |    | Cancel                                   |
| FILLING APPLICATION                                                                 |                                                        |                                                                                     |                                          |
| ICON                                                                                | FUNCTION                                               | ICON                                                                                | FUNCTION                                 |
|    | Setup Filling mode configurations                      |    | Switch the Setpoints' input method       |
|   | Set input value or current weight on the pan as target |   | Quit (Used in Library)                   |
|  | Set Target, Setpoint1 and Setpoint2 value              |  | Add a record (Used in Library)           |
|  | Stop                                                   |  | Delete selected record (used in Library) |
|  | Start                                                  |  | Recall selected record (used in Library) |
|  | Manual Accumulation                                    |  | Edit selected record (used in Library)   |
| DYNAMIC APPLICATION                                                                 |                                                        |                                                                                     |                                          |
| ICON                                                                                | FUNCTION                                               | ICON                                                                                | FUNCTION                                 |
|  | Setup Dynamic mode configurations                      |  | Start                                    |
|  | Set Averaging Time                                     |  | Cancel                                   |
|  | Manual Accumulation                                    |  | Reset                                    |

TABLE 9-5. BUTTON ICONS (Continued)

| DIFFERENTIAL APPLICATION                                                            |                                          |                                                                                      |                                          |
|-------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------|
| ICON                                                                                | FUNCTION                                 | ICON                                                                                 | FUNCTION                                 |
|    | Setup Differential mode configurations   |    | Accept current weight                    |
|    | Edit Items                               |    | Reset                                    |
| PERCENT APPLICATION                                                                 |                                          |                                                                                      |                                          |
| ICON                                                                                | FUNCTION                                 | ICON                                                                                 | FUNCTION                                 |
|    | Setup Percent mode configurations        |    | Manual Accumulation                      |
|    | Set reference weight                     |                                                                                      |                                          |
| FORMULATION APPLICATION                                                             |                                          |                                                                                      |                                          |
| ICON                                                                                | FUNCTION                                 | ICON                                                                                 | FUNCTION                                 |
|   | Setup Formulation mode configurations    |   | Print formulation result                 |
|  | Set factor                               |  | View selected record (Used in Library)   |
|  | Start                                    |  | Edit record Name (Used in Library)       |
|  | Select                                   |  | Delete selected record (Used in Library) |
|  | Reset                                    |  | Go back to previous screen               |
|  | Next component                           |  | Go to next screen                        |
|  | Last Component                           |  | Add a record (Used in Library)           |
|  | Quit (Used in Library)                   |  | Edit selected record (used in Library)   |
|  | Save formulation result as a new receipt |                                                                                      |                                          |

TABLE 9-5. BUTTON ICONS (Continued)

| ICON                                                                              | FUNCTION |  | ICON                                                                               | FUNCTION            |
|-----------------------------------------------------------------------------------|----------|--|------------------------------------------------------------------------------------|---------------------|
|  | Guest    |  |  | Print Range         |
|  | Login    |  |  | Locate Alibi record |

**10. COMPLIANCE**

Compliance to the following standards is indicated by the corresponding mark on the product.

| Mark                                                                              | Standard                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | This product conforms to the EMC Directive 2004/108/EC, the Low Voltage Directive 2006/95/EC and the Non-automatic Weighing Instruments Directive 2009/23/EC.<br>The complete Declaration of Conformity is available online at <a href="http://europe.ohaus.com/europe/en/home/support/compliance.aspx">europe.ohaus.com/europe/en/home/support/compliance.aspx</a> . |
|  | AS/NZS CISPR 11, AS/NZS 61000.4.3                                                                                                                                                                                                                                                                                                                                     |
|  | UL Std. No. 60950-1 (2 <sup>nd</sup> edition)<br>CAN/CSA-C22.2 No. 61010-1-04                                                                                                                                                                                                                                                                                         |

|                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <br><br>  | <p><b>Important notice for verified weighing instruments</b></p> <p>Weighing instruments verified at the place of manufacture bear one of the preceding marks on the packing label and the green 'M' (metrology) sticker on the descriptive plate. They may be put into service immediately.</p> <p>Weighing instruments to be verified in two stages have no green 'M' (metrology) on the descriptive plate and bear one of the preceding identification marks on the packing label.<br/>The second stage of the initial verification must be carried out by the approved service organization of the authorized representative within the EC or by the national weights and measures (W+M) authorities.</p> <p>The first stage of the initial verification has been carried out at the manufacturer's work.<br/>It comprises all tests according to the adopted European standard EN45501:1992, paragraph 8.2.2.</p> <p>If national regulations limit the validity period of the verification, the user of the weighing instrument must strictly observe the re-verification period and inform the respective W+M authorities.</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**FCC Note**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**Industry Canada Note**

This Class A digital apparatus complies with Canadian ICES-001.

**ISO 9001 Registration**

In 1994, OHAUS Corporation, USA, was awarded a certificate of registration to ISO 9001 by Bureau Veritas Quality International (BVQI), confirming that the OHAUS quality management system is compliant with the ISO 9001 standard's requirements. On June 21, 2012, OHAUS Corporation, USA, was re-registered to the ISO 9001:2008 standard.

**Disposal**

In conformance with the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.

The Batteries Directive 2006/66/EC introduces new requirements from September 2008 on removability of batteries from waste equipment in EU Member States. To comply with this Directive, this device has been designed for safe removal of the batteries at end-of-life by a waste treatment facility.

Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.

If you have any questions, please contact the responsible authority or the distributor from which you purchased this device.

Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Disposal instructions in Europe are available online at [europe.ohaus.com/europe/en/home/support/weee.aspx](http://europe.ohaus.com/europe/en/home/support/weee.aspx).

Thank you for your contribution to environmental protection.

### **LIMITED WARRANTY**

Ohaus products are warranted against defects in materials and workmanship from the date of delivery through the duration of the warranty period. During the warranty period Ohaus will repair, or, at its option, replace any component(s) that proves to be defective at no charge, provided that the product is returned, freight prepaid, to Ohaus.

This warranty does not apply if the product has been damaged by accident or misuse, exposed to radioactive or corrosive materials, has foreign material penetrating to the inside of the product, or as a result of service or modification by other than Ohaus. In lieu of a properly returned warranty registration card, the warranty period shall begin on the date of shipment to the authorized dealer. No other express or implied warranty is given by Ohaus Corporation. Ohaus Corporation shall not be liable for any consequential damages.

As warranty legislation differs from state to state and country to country, please contact Ohaus or your local Ohaus dealer for further details.





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