Ranger® 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 60 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

WARNING	for a hazardous situation with medium risk, possibly resulting in injuries or death if not avoided.
CAUTION	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.
Attention	For important information about the product
Note	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 R71MHD6	R71MD3 R71MD6	R71MHD15 R71MHD35	R71MD15 R71MD35 R71MD60
Terminal			X	X	X	X
In-Use Cover			X	X	X	X
Weighing Base			X	X	X	X
Weighing Platform	210 x 210 mm		X			
Weighing Platform	280 x 280 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.

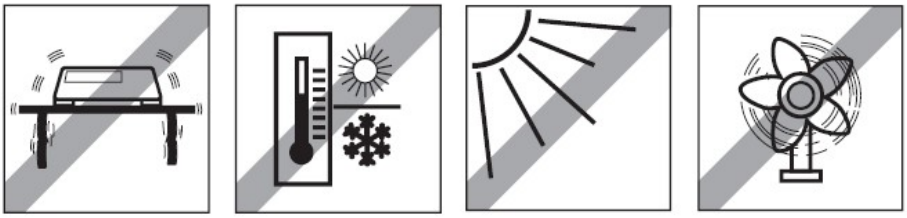
Note: The Terminal is identical for all Ranger 7000 Scale models.

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

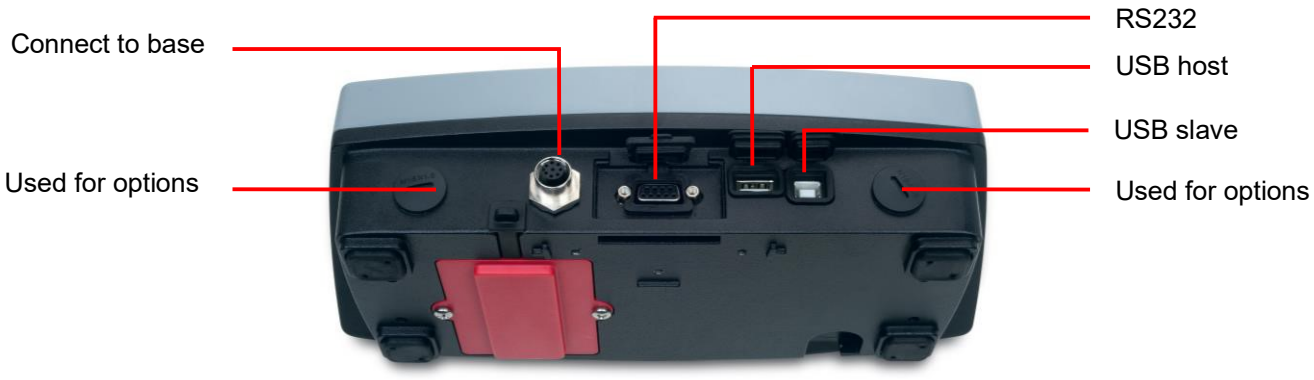
The Ranger 7000 comes with an AC power cord. Connect the power cord to a suitable grounded electrical outlet and press the ON button on the side of the base (see figure below).

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

The Ranger 7000 scale has 4 interfaces on the back of the terminal:
- RS422: used to communicate with the base
- RS232: used to connect to computer or a printer
- USB host
- USB slave

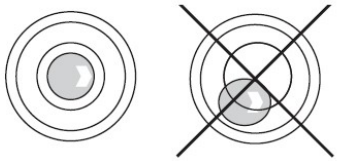


Interface connections on back of Terminal.

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 1.5 meters away).

2.8 Separating the Terminal from the Weighing Base

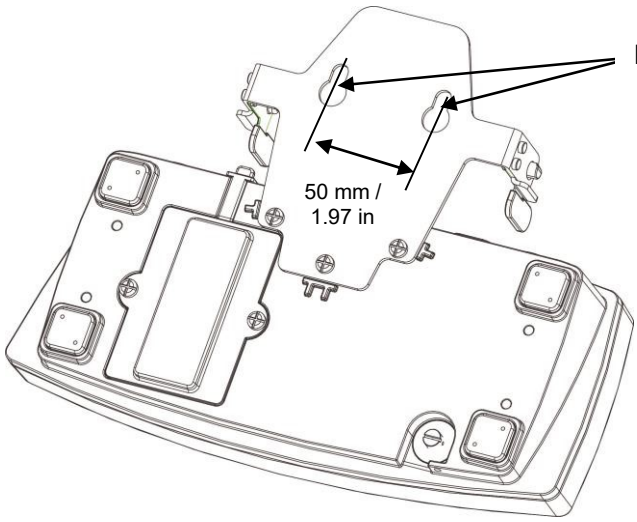
1. To detach, press both the Release buttons inward (both at the same time) and gently pull the Terminal towards you (outward) until the Terminal is detached. These Release buttons disengage the two hooks holding the Terminal to the Base. A cable is attached to the Terminal. Take care to not damage or 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.

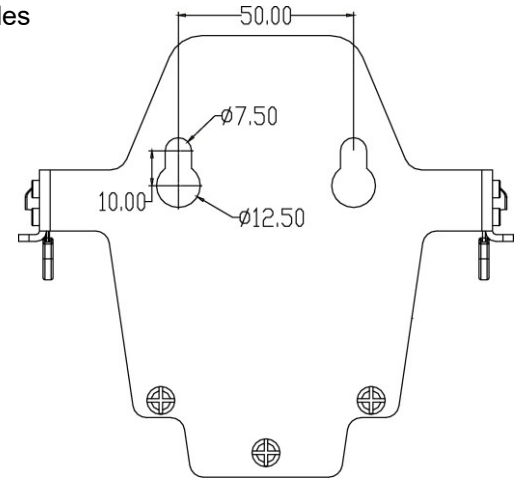
Release Buttons

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	
g kg lb	Switch the main weighing unit between the available units	
	2 ABC 9 WXYZ	Short Press: Input '2'-'9' To Enter 'A' press 2 ABC 2 times. For lower case 'Z', press 9 WXYZ 5 times.
	0 User	Short Press: Input '0' Long Press: Go to User Login screen
	1	Short Press: Input '1' Long Press: Switch platform between scale 1 and scale 2
	CLR +/-	Short Press: Clear character/string when editing string If no input is active, clear the current active library When there is no value added, pressing this button will switch the value sign between positive and negative.
	.	Short Press: Input '.', space, '_' To Enter '_' press . 3 times.
→0←	Perform Zero operation	
→T←	Perform Tare operation 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 **Menu** button to open the menu list.

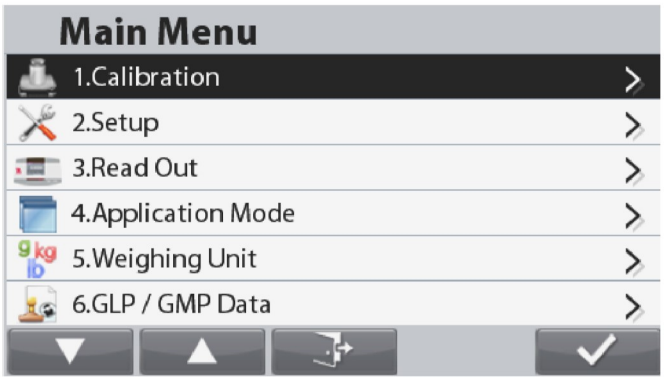
Press the button below and to move down and up the list respectively.

To select the highlighted menu item, press . Press to move back to previous screen.

Alternatively, you can select each item through pressing the number on keyboard which is corresponding to the number before each item.

For example, press 1 on keyboard to select **Calibration**.

	Calibration: Select to view calibration options.
	Setup: Select to view user preferences.
	Read Out: Select to view scale settings.
	Application Modes: Select to view application modes.
	Weighing Units: Select to view weighing units.
	GLP and GMP Data: Insert user data for traceability.
	Communication: Select to view communication settings.
	User Select to view and edit user settings.



	Lock Key Select to edit lock key settings
	Memory: Select to view USB Memory and Alibi memory settings.
	Maintenance: 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


Weighing


Counting


Check


Formulation


Percent Weighing


Filling


Dynamic (Animal)


Density Determination


Differential


Sieve Analysis

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

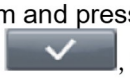
Note: Refer section 9.5, or press the  button for button icon explanation.

4.1.1 Application Setup

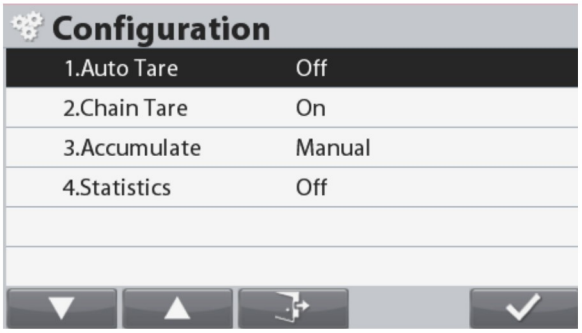
The Application can be customized for various user preferences.

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  .



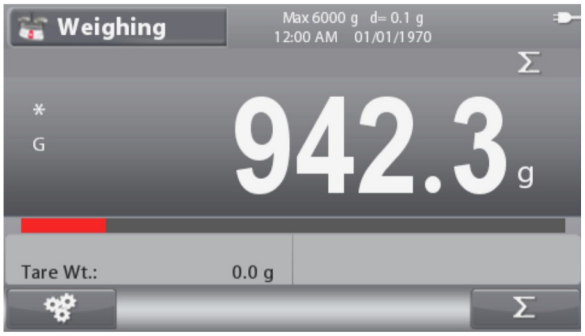
The Weighing Configurations are defined below (defaults in **Bold**)

Item	Available Settings	Comments
Auto Tare	On, **Off**	To enable Automatic Tare
Chain Tare	**On**, Off	To enable Chain (Continuous) Tare
Accumulate	Off , Automatic, **Manual**	To enable Accumulation / Totalization
Statistics	On**, Off**	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 >= 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.

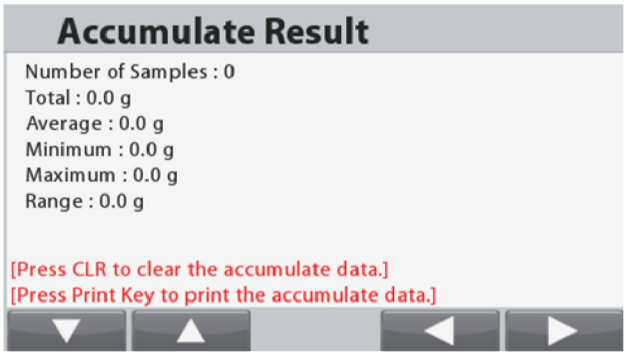
Viewing the Accumulation results

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

The **Accumulate Result** screen is displayed.

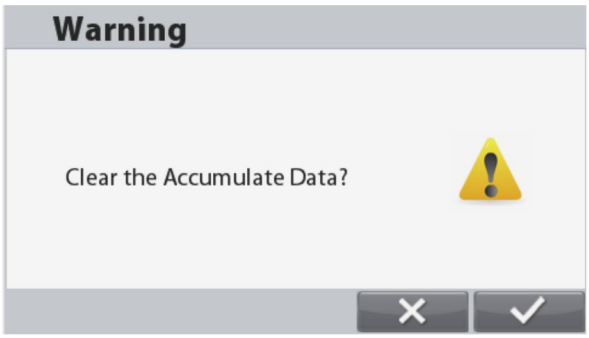
Note: To return to home screen press the  button.

Press the  button to print Accumulation result.



Clearing the Statistics / Accumulation results

To clear the statistic / accumulation results, press the button CLR +/-.
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.



Note: The accumulate/statistic information will be cleared automatically when selecting a new library

4.1.3 Input/Output (I/O) Setup
The I/O's can be customized for various user preferences.

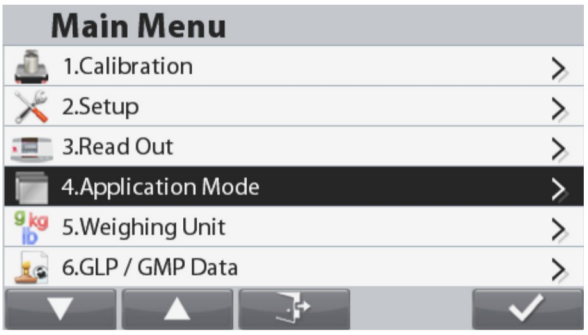
The I/O's are defined below (defaults in **Bold**).

Item	Available Settings
Discrete Input 1	**Off,** Zero, Tare, Clear Tare, Print, Unit, Accumulate
Discrete Input 2	**Off,** Zero, Tare, Clear Tare, Print, Unit, Accumulate
Discrete Output 1	**Off,** Overload, Underload
Discrete Output 2	**Off**, Overload, Underload
Discrete Output 3	**Off**, Overload, Underload
Discrete Output 4	**Off,** Overload, Underload

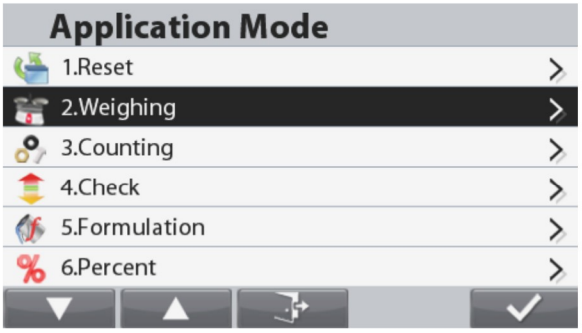
Note: The I/O's will only work when the I/O Option Board have been installed. See the Accessory list in section 9.4 for information.
The option I/O board provides two isolated inputs and four dry-contact normally open relay outputs which can be used for simple process weighing.

Press the lock button to enter the Main Menu.

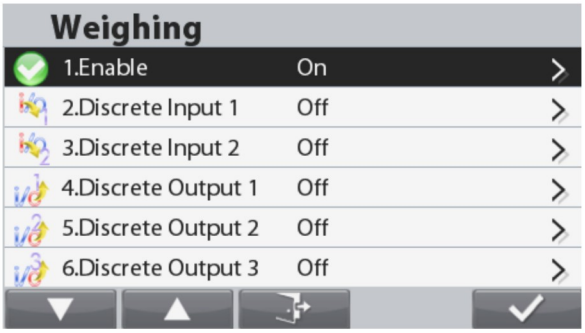
With the button corresponding to the icon, go down the list and highlight **Application Mode**. Enter this sub-menu by pressing the button corresponding to the icon.



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.



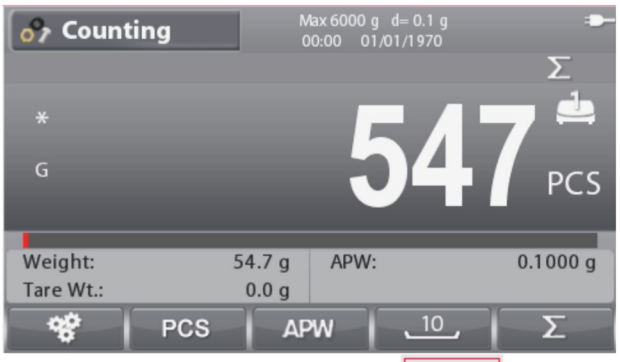
4.2 Counting

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

Application Icon

Reference Fields

Functions

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

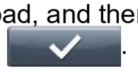
4.2.1 Set the Average Piece Weight (APW)

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.