

Rice Lake Dietary/Fitness Scale

*140-10-7 Series
Software Revision 11387*

Technical and Operating Instructions



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Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at www.ricelake.com or obtained by calling 715-234-9171 and asking for the training department



Rice Lake continually offers web-based video training on a growing selection of product-related topics at no cost. Visit www.ricelake.com/webinars.

1.0 Introduction

The Rice Lake Dietary Fitness Scale is ideal for use in fitness centers, wrestling and boxing facilities, and weight management facilities. The scale is durable and is designed to provide accurate, reliable and repeatable weight measurements and has features that enable a fast and convenient weighing process.



This manual can be viewed and downloaded from the Rice Lake Weighing Systems web site at www.ricelake.com/health. Rice Lake Weighing Systems is an ISO 9001 registered company.



Figure 1-1. The Rice Lake Dietary Fitness Scale

To prevent injury to individuals and damage to your scale, please follow these instructions carefully:

- Do not transport the scale while the platform is loaded.
- Do not drop the scale or subject it to violent shocks.
- For accurate weighing, the scale must be placed on a flat, stable surface.
- For accurate weighing, verify proper operation according to the procedure described in this manual.
- Do not use around flammable liquids.
- Operation at other voltages and frequencies than specified could damage equipment.

2.0 Scale Assembly

2.1 Unpacking Your Scale

Place the unopened box in an open area that has ample room for unpacking the scale.

Parts contained in the shipping box include:

- The scale
- This manual
- The indicator
- AC adaptor (located in white box)

2.2 Repacking

If the Dietary Fitness Scale must be returned for modification, calibration or repair, it must be properly packed with sufficient packing materials. Whenever possible, use the original carton for shipping the scale back.

NOTE: *Damage caused by improper packaging is not covered by the warranty.*

2.3 Setting Up Your Scale

Use the following steps to set up the Rice Lake Dietary Fitness Scale.

1. Remove the scale out of the packaging material that it came in and move it into the area where the weighing process will occur.
2. To check for scale alignment, put the scale on a flat surface and look at the round spirit level on the base of the scale. The scale is aligned when the air bubble is immediately in the center of the circle. If the air bubble is not centered, unscrew and adjust the scale legs until the air bubble is centered. It's recommended to place the scale on a hard, level surface for the most accurate weighments. Thin carpeting is fine but not recommended.

AC Power Connections

The Rice Lake Dietary Fitness Scale has a 120 VAC adaptor or 230 VAC adaptor to use when power is readily available. The AC power adaptor plugs into the back of the indicator as shown in Figure 2-1.

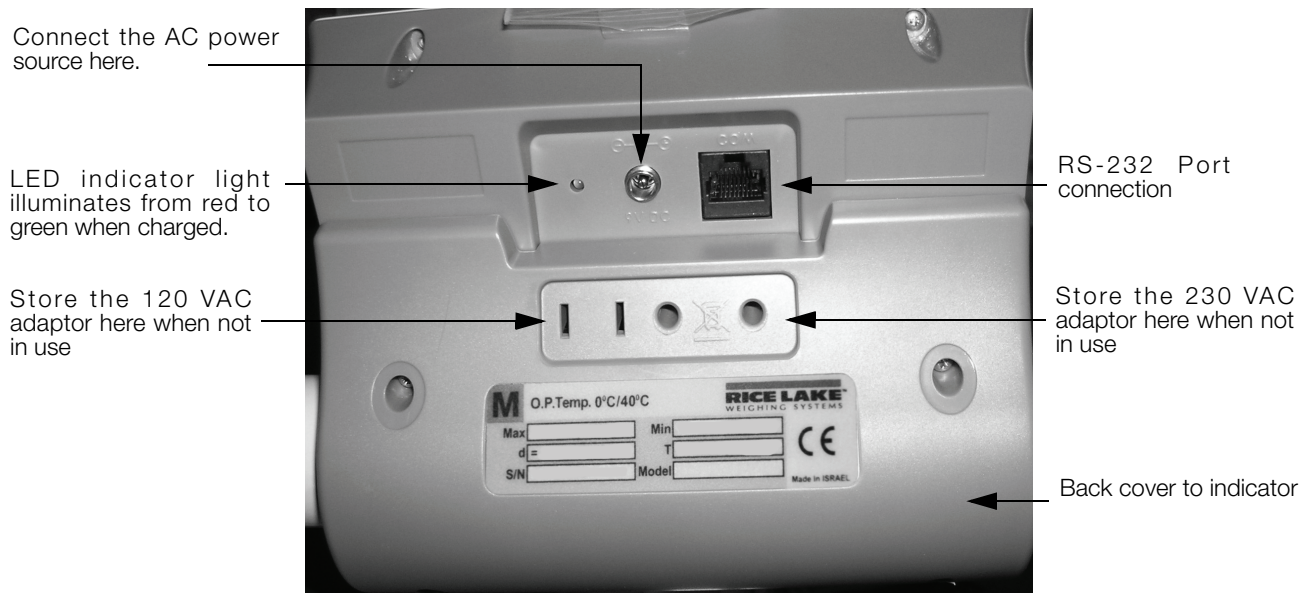


Figure 2-1. LED Light Location

The AC adaptor, when not in use, plugs into the back housing of the indicator. Figure 2-1 shows that location.

The Rice Lake Dietary Fitness Scale is capable of running its internal sealed lead-acid rechargeable battery if no additional power source is available. Battery life is approximately 75 hours. If the *LO Bat* indicator is showing on the display, recharge the battery or connect the scale to an AC power source as soon as possible for accurate weighing.

Battery Charging

When the AC adaptor is connected to a power source, the rechargeable battery goes into recharge mode.

NOTE: *To maintain battery longevity we recommend you charge it on a regular basis rather than waiting until it is fully discharged.*

The LED indicator light on the back of the scale housing will illuminate red during the charging period, and change over to green when the battery becomes fully charged.

Load Cell Connections

To gain access to the load cell connection point, remove the four back retaining screws and back cover as shown in Figure 2-1. Figure 2-2 illustrates where the load cell connection point is.

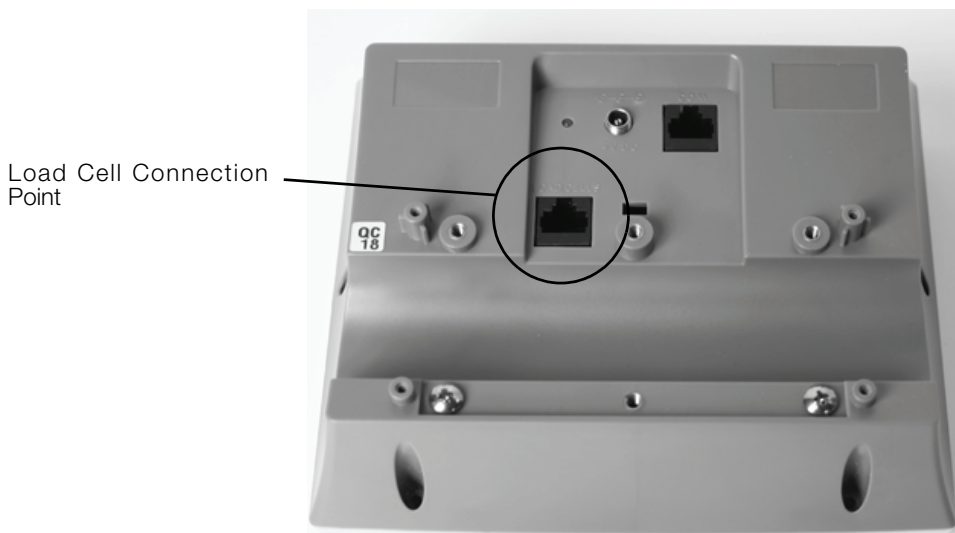


Figure 2-2. Load Cell Connection Point

2.4 Getting Ready to Weigh a Patient

Once the scale is properly unpacked and set up, and prior to weighing a patient, step on the scale to check the scale that all functions are working correctly. The scale is calibrated from the factory so simply turn on the scale and step on the scale to get a weight reading. Press the **REWEIGH** key again to verify that weight.



Figure 2-3. Press the Reweigh Key to Verify Weight

3.0 Scale Operation

The display has various front panel keys. They are shown below.



Figure 3-1. Front Panel Display Keys






Key	Name	Function
	ON-OFF/ZERO	ON-OFF - Switches the scale on or off ZERO - Clears weight off the scale and returns it back to zero.
	BMI/TARE	BMI - Enables the user to access the BMI (Body Max Index) function. TARE - Used to subtract a weight off the scale ie: wheelchair
	REWEIGH	Allows you to reweigh a patient without having them leave the scale.
	Kg-Lb/PRINT	Allows the user to toggle between kilograms and pounds. Press this key to print a weight if connected to a printer.

Table 3-1. Key Functions

Caution  The keys on the front panel display are very sensitive so only a gentle pushing motion is required to obtain results.

The scales have the capability of performing different operations beyond just calculating weight. The various operating instructions are described below.

3.1 Weighing

Use the following steps to weigh a person.

1. Press the **On-Off/Zero** key to turn on the scale and *0.0* will appear on the display.
2. Ask the person to step onto the scale. The display shows *WEIGH*, then the person's weight, and beeps to indicate the end of the weighing process.
3. To reweigh, press the **REWEIGH** key.
4. To change the display from Kg to Lb and vice-versa, press the **Kg-Lb** key.
5. If the display hold feature is on (OP6=1), the weight will remain on the display even after the person steps off the scale. To clear the weight, press the **On-Off/Zero** key.
6. To turn off the scale, press and hold the **On-Off/Zero** key until *OFF* appears on the display.

3.2 Using the Body Mass Index (BMI) Function

Body mass index (BMI) is the relationship between weight and height associated with body fat and health risk. It is a reliable indicator of body fatness for people and even though BMI does not measure body fat directly, research has shown the BMI correlates to direct measures of body fat. BMI is an inexpensive and easy-to-perform method of screening for weight categories that may lead to health problems for adults.

Calculating BMI is one of the best methods for population assessment of overweight and obesity. Because calculation requires only height and weight, it is inexpensive and easy to use for clinicians and for the general public. The calculation is based on the following formulas:

Calculate BMI by dividing weight in pounds (lbs) by height in inches (in) squared and multiplying by a conversion factor of 703.

Example: weight = 150 lbs, height = 5'5 (65")

Calculation: $[150 \div (65)^2] \times 703 = 24.96$

The standard weight status categories associated with BMI ranges for adults are shown in the following table.

BMI	Weight Status
Below 18.5	Underweight
18.5 - 24.9	Normal
25.0 - 29.9	Overweight
30.0 and Above	Obese

Table 3-2. Standard Weight Status

The following examples show weight ranges, the corresponding BMI ranges and the weight status categories for a sample height.

Height	Weight Range	BMI	Weight Status
5'9"	124 lbs or less	Below 18.5	Underweight
	125 lbs to 168 lbs	18.5 to 24.9	Normal
	169 lbs to 202 lbs	25.0 to 29.9	Overweight
	203 lbs or more	30 or higher	Obese

Table 3-3. BMI Ranges and Weight Status Example

Use the following steps in determining the BMI.

1. To use the BMI function, weigh the patient as described under Weighing (above) and then press the **BMI** key. If weighing in Lbs, the default height of (5 feet) appears on the display. Use the up or down arrows to increase the feet height by one foot increments). Press the **BMI** key again to display inches (default is 7.0 inches) Again, use the up or down arrows to increase or decrease the inches height by 0.5" increments. Press the **BMI** key again to accept the inches value. The final height value will be displayed ie: 5-07.5 = 5' 7.5".
2. If you are weighing in Kgs, the default will be 170.0 cm. Use the up or down arrows to increase or decrease by 0.5 cm increments.
3. To see the patient's calculated BMI, press the **BMI** key again. The BMI appears.
4. To cancel the BMI display, press the **BMI** key.

3.3 Using the Tare Function

You can use the tare function for deducting an extra weight (such as medical equipment attached to the patient) in a weighing operation.

Use the following steps to use the tare function.

1. With the scale set to *0.0*, place the extra load on the scale. The display shows *WEIGH* and then the weight of the load.
2. Press and hold the **TARE** key until *TARE* appears on the display. The display returns to *0.0* and *TARE* appears on the left side of the display.
3. Remove the load from the scale. The weight of the load appears with a negative symbol to the left of it.
4. Ask the patient to step onto the scale with the load. The display then shows the patient's weight without the weight of the load.
5. The weight of the load remains stored in memory, so you can continue to weigh patients who are carrying the same tare weight. For example, when using the same wheelchair for weighing more than one patient.
6. To cancel the tare weight, press and hold the **TARE** key until *TARE* disappears from the display. The tare weight is also cancelled when the scale is turned off.

Use the following steps to enter a tare without placing that item on the scale. An example of this would be if you've got a patient in a wheelchair and the wheelchair has a known weight (has been tagged) you can enter that weight manually.

1. With the scale set to *0.0 Lbs* (there must be no weight on the scale), press the **TARE** key. The display will alternate between a value and the word *TARE*.
2. To change the value, press and hold the **Kg/Lb** key until the right most digit is equal to the first digit of the value you want. Example: If you want *103.5*, hold the key until the display is *0.1*.
3. To advance to the next digit, press the **Kg/Lb** key twice quickly. The digit you changed will move left and the right most digit will again be *0*. Again, hold the **Kg/Lb** key until the right most digit is equal to the next digit in the numbers you want.
4. Continue as in Step 3 until you are displaying the value you want, then press the **TARE** key.
5. You can now accurately weigh the patient.
6. To cancel the tare weight, press and hold the **TARE** key until *TARE* disappears from the display. The tare weight is also cancelled when the scale is turned off.

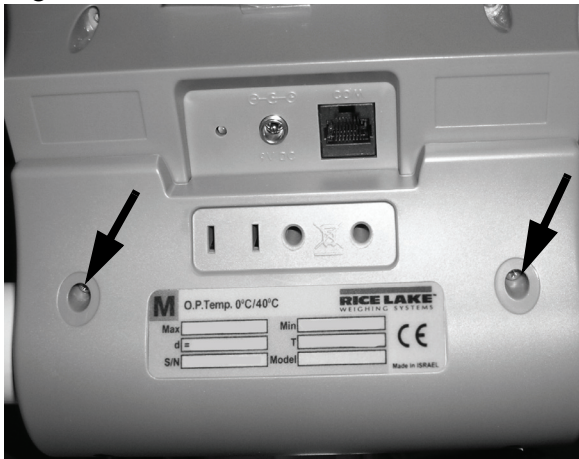
4.0 Scale Configuration

Options and parameter setup are done through the scale configuration section and is used for setting values and various parameters and options that are essential for the functioning of the system. Entry into this mode is possible only when the scale is turned off.

4.1 Enabling Configuration or Calibration Modes

Before the scale will enter either the Configuration or Calibration mode, the configuration enable jumper must be removed.

Access to that jumper is gained by removing the back cover of the indicator. Remove the four back cover retaining screws as shown on the left side of Figure 4-1. With the cover removed, the jumper can be seen sticking through the hole in the rear housing (shown in Figure 4-1 - right side). Remove that jumper to gain access to the configuration and calibration modes.



Remove retaining screws x 4 (only 2 shown)



Remove jumper to gain access to configuration and calibration modes

Figure 4-1. Gain Access to the Configuration/Calibration Enable Jumper on the Back of the Indicator

After configuration or calibration is done, the jumper must be replaced for normal scale operation.

NOTE: A display of *Con En* indicates that the jumper is not in place. Put jumper on both pins to return the scale to normal weigh mode.

4.2 Configuration Mode

To get into the configuration mode, turn the scale off and remove the configuration jumper as shown in Figure 4-1. Turn the scale on. While *Start* is displayed, press and hold the **Kg-Lb** key until *IDENT* appears on the display.

To change from one parameter to the next, press the **REWEIGH** key once.

To change the value of the parameter, use the **Kg-Lb** key.

From the *SAVE* phase: to save the configuration data, press the **REWEIGH** key. *DONE* appears for one or two seconds followed by *Start* and the display enters the weighing mode, ready to start the weighing process. To exit without saving changes, press the **Lb/Kg** key.

Various parameters can be set up while in configuration mode.

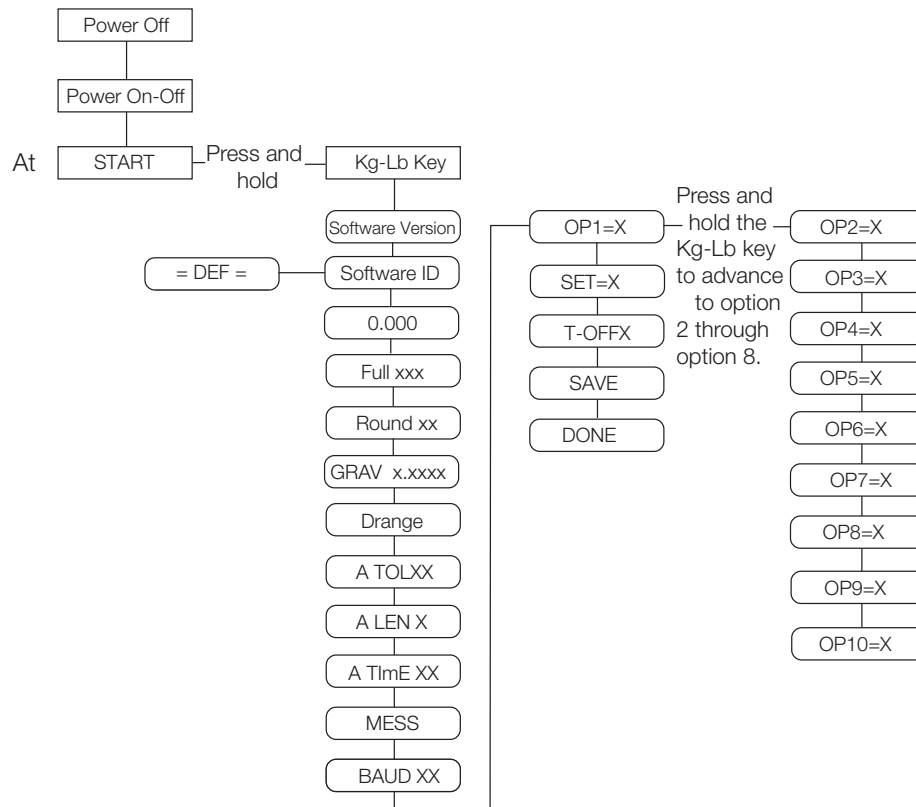


Figure 4-2. Configuration Mode Menu Structure

4.3 Numeric Data Entry

Use the **Kg-Lb** key to change the numeric data entry while setting up the various configuration parameters and while in calibration mode.

Use the following steps:

1. Press and hold the **Kg-Lb** key, the rightmost digit on the display will begin to increment.
2. Release the **Kg-Lb** key to stop the increments.
3. A double click on the **Kg-Lb** key will cause the right hand digit to move one place to the left.
4. Repeat steps 1-3 until the desired number is reached.

The following table lists the various display messages and sequence when setting up the scale.

NOTE: <-> means the display toggles between the two values.

Step		Function	Display	Available Parameters
1	With the scale turned off, remove the configuration jumper as shown in Figure 6?-??.			Allows the scale to enter into either configuration or calibration mode.
2	With the scale turned off, simultaneously press the On-Off/Zero and Kg-Lb key.	Enters into programming mode	StArt	Scale automatically advances to Step 3.
3		Identifies the software ID	IdEnt<-> 11300	Press the REWEIGH key to advance to the next step.
4		Identifies software version	Id<->11387	Press the REWEIGH key to advance to the next step.
5		Allows selection of decimal point setting	dOt<->000.0 Default = 0.0	To change the position of the decimal point, press the Kg-Lb key to toggle through the various options. To advance to the next step, press the REWEIGH key.
6		This indicates the maximum allowed weight. Any weight above this value will cause <i>StOP</i> to appear on the display while in the weighing mode.	FULL<->XX.XXX Default = 600 Lb Note:This value is dependent on the model you have. Refer to the serial number label on your scale and set appropriately.	Use the numeric data entry (See Section 4.0 for more information on Gravity Correction) to change the value. To advance to the next step, press the REWEIGH key.
7		This limit defines the start of the weighing threshold to compensate for a key press during the Tare function.	Limit <->0.0	Use the numeric data entry (See “Numeric Data Entry” on page 8.) to see the optimum weight value of 5 lbs. To advance to the next step, press the REWEIGH key.
7		Display divisions	rOUnd<->XXXX Default = 0.1 Lb	To change the display divisions, press the Kg-Lb key to toggle through the various options. 0.1, 0.2, 0.5, 1.0, 2.0, 5.0, 10.0, 20.0. To advance to the next step, press the REWEIGH key.
8		Gravity value at point of use.	GrAv<-> 9.8062	Use the numeric data entry (See Section 4.0 for more information on Gravity Correction) to change the value. To advance to the next step, press the REWEIGH key.
9		Double ranges limit	drAnGe <-> 0	This parameter is preset from the factory. To advance to the next step, press the REWEIGH key.
10		Weight algorithm initial tolerance	A tOL <-> 20	This parameter is preset from the factory. To advance to the next step, press the REWEIGH key.

Table 4-1. Configuration Mode Menu

Step		Function	Display	Available Parameters
11		Weight algorithm initial exponent	A LEn <-> 8	This parameter is preset from the factory. To advance to the next step, press the REWEIGH key.
12		Weight algorithm maximal exponent	A t INE <-> 10	This parameter is preset from the factory. To advance to the next step, press the REWEIGH key.
12		Message style on weight algorithm	MESS <-> WEIGH	This displays the message that will show on the indicator display. To change the message, press the Kg-Lb key. WEIGH, LIVE, ----- To advance to the next step, press the REWEIGH key.
13		This allows for setting the baud rate of the RS-232 connection	BAUd <-> XXXX Default - 9600	To change the baud rate, use the numeric data entry (See "Numeric Data Entry" on page 8.) To advance to the next step, press the REWEIGH key.
14		Optional features Option 1 allows the selection of unit of measure (UOM) in calibration and programming.	OP1 = 1	Hold the Kg-Lb key for browsing through the options. Double click on the Kg-Lb key to change the options value or to advance to the next step, press the REWEIGH key. OP1 = Unit of measure (UOM) in calibration and programming. 0=Kg 1=Lb
		Option 2 allows the scale to work only in Kg.	OP2 = 0	Hold the Kg-Lb key for browsing through the options. Double click on the Kg-Lb key to change the options value or to advance to the next step, press the REWEIGH key. 0=Disable 1= Enable This option works only if Option 3 is disabled
		Option 3 allows the scale to work only in Lb.	OP3 = 0	Hold the Kg-Lb key for browsing through the options. Double click on the Kg-Lb key to change the options value or to advance to the next step, press the REWEIGH key. 0=Disable 1=Enable

Table 4-1. Configuration Mode Menu

Step	Function	Display	Available Parameters
	Option 4, the scale must be stable to show a Kg or Lb weight reading. You can enable or disable this.	OP4 = 1	Hold the Kg-Lb key for browsing through the options. Double click on the Kg-Lb key to change the options value or to advance to the next step, press the REWEIGH key. 0=Disable 1=Enable Note: <i>won't show lb or kg until the scale is at a standstill.</i>
	Option 5 allows for live or dynamic weighing	OP5 = 1	Hold the Kg-Lb key for browsing through the options. Double click on the Kg-Lb key to change the options value or to advance to the next step, press the REWEIGH key. 0=Disable 1=Enable
	Option 6 allows you to either enable or disable the hold function on the scale	OP6 = 0	Hold the Kg-Lb key for browsing through the options. Double click on the Kg-Lb key to change the options value or to advance to the next step, press the REWEIGH key. 0=Disable 1=Enable
	Option 7 allows you to either enable or disable the baby scale function.	OP7= 0	Hold the Kg-Lb key for browsing through the options. Double click on the Kg-Lb key to change the options value or to advance to the next step, press the REWEIGH key. 0=Disable 1=Enable Note: <i>Leave set to 0</i>
	Option 8 allows you to choose between 9 volts and 6 volts	OP8 = 1	Hold the Kg-Lb key for browsing through the options. Double click on the Kg-Lb key to change the options value or to advance to the next step, press the REWEIGH key. 0=9 volts 1=6 volts Note: <i>Leave set to 1</i>
	Option 9 allows you to select the communications protocol.	OP9 = 1	Hold the Kg-Lb key for browsing through the options. Double click on the Kg-Lb key to change the options value or to advance to the next step, press the REWEIGH key. 0= escape 1= standard protocol

Table 4-1. Configuration Mode Menu

Step		Function	Display	Available Parameters
		Option 10 allows you to enable the user menu.	OP10 = 1	Hold the Kg-Lb key for browsing through the options. Double click on the Kg-Lb key to change the options value or to advance to the next step, press the REWEIGH key. 0= enable 1= disable
15		Set Option defaults	Set < - > 1	To change, press the Kg-Lb key. 0 - default Options = (OPx) 1 = US default (US defaults are OP1-1, OP2-0, OP3-0, OP4-1, OP5-1, OP6-0, OP-7-0, OP8-1, OP9-1, OP10-1). 2 = European 1 default 3 = European 2 default 9 = Used if OP1 through OP10 have been changed to something other than the factory default settings. Note: Always set to 1 or 9 for US indicators. To advance to the next step, press the REWEIGH key.
16		Determines the automatic shut off time when the scale is not in use. Options are between one and 20 minutes. This is used when the unit is battery operated.	t-OFF <-> 5	Press and hold the Kg-Lb key to scroll through the furthest right hand digit on the display (0-9). If you want a value from 10 to 19, with the display sitting at 1, double press the Kg-Lb key and 10 appears. Press and hold the Kg-Lb key to begin scrolling 10-19. If you want a value of 20, with the display sitting at 2, double press the Kg-Lb key and 20 will appear. To advance to the next step, press the REWEIGH key.
17			StArt or SAve	If no changes were made in the parameters the display will automatically show <i>StArt</i> and then returns to normal weighing mode. If a parameter was changed, the display will show <i>SAve</i> . To save changes made, press the REWEIGH key. To return to weigh mode without saving changes, press the Kg-Lb key.
18			Con En	Replace the configuration jumper.

Table 4-1. Configuration Mode Menu

4.4 Reset To Factory Defaults

The configuration parameters may be reset to factory defaults while in the configuration mode. To do so, enter the configuration mode. Press the **REWEIGH** key once to advance to displaying the software version (ID <-> 11305). Press and hold the **BMI** key until =DEF= is displayed. At this point, if you wish to perform the default function, press the **REWEIGH** key and the scale will show *DONE*, then it will restart. If you do not want to perform the default function, press the **ON/OFF** key.

After performing the default function, the scale will require re-calibration. In addition, the scale will be set up to a capacity of 600 lbs. The capacity varies by model - refer to the serial label on your scale and reconfigure the capacity (FULL) and display divisions (rOUNd) as necessary in the configuration menu.

This procedure also resets the Deep Programming Mode settings to factory defaults (see Section 2.1).

4.5 Deep Programming Mode

Before the scale can enter into the deep programming mode, the configuration enable jumper must be removed. Use the following steps to access that jumper and get into deep programming mode.

1. Access to that jumper is gained by removing the back cover of the indicator. Remove the four back cover retaining screws as shown on the left side of Figure 6?-?? on page 7. With the cover removed, the jumper can be seen sticking through the hole in the rear housing (shown in Figure 6?-?? on page 7 - right side).
2. Remove that jumper to gain access to the deep programming modes.
3. Turn unit over and press and hold the **REWEIGH** key and the **On-Off/Zero** key simultaneously to turn the scale on.
4. Continue to hold the **REWEIGH** key until *IDENT* appears on the display.
5. With *IDENT* appearing on the display, press and hold the **BMI/Tare** key until the *HP-x* appears on the display which is the deep programming mode.
6. To change from one parameter to the next, you must press once on the **REWEIGH** key.
7. To change the value of the parameter, use the **Kg-Lb** key.
8. From the *SAVE* phase: press the **REWEIGH** key to exit and save the modified date. *DONE* appears for one or two seconds followed by *Start* and the display enters into weighing mode and is ready to start the weighing process.
9. Replace the programming/calibration jumper.
10. Replace the back cover of the indicator and secure with screws.
11. Various parameters can now be set up while in programming mode.

NOTE: A display of *Con En* indicates that the jumper is not in place. Put jumper on both pins to return the scale to normal weigh mode.

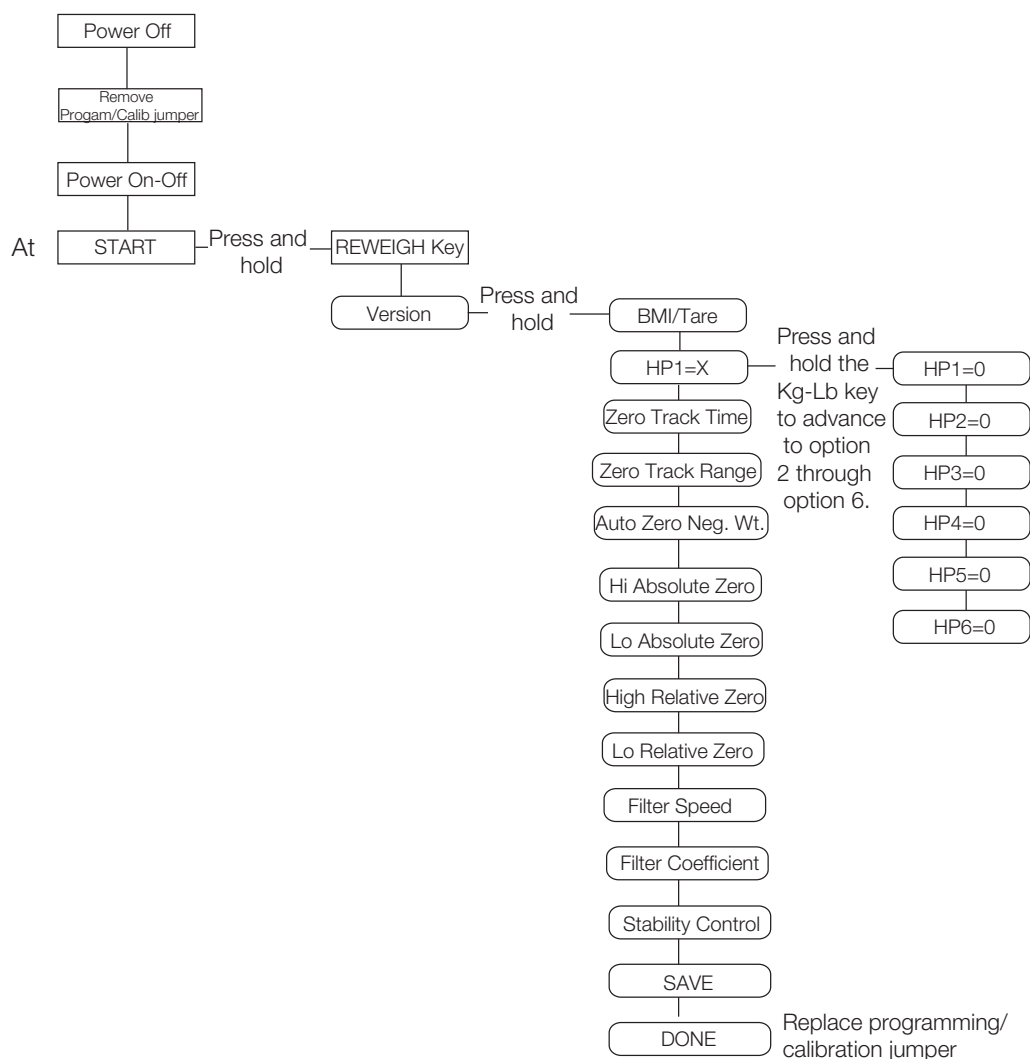


Figure 4-3. Deep Programming Mode Menu Structure

The following table lists the various display messages and sequence when setting up the scale in deep programming mode.

Step	Function	Display	Available Para
1	With the scale turned off, and the programming/calibration jumper removed, press and hold the REWEIGH key while turning the scale on. Continue to until <i>IDENT</i> is displayed.	StArt	Scale automatically advances to Step 2
2	Displays the software ID	IDENT<->11300	See Step 3

Table 4-2. Deep Programming Mode Menu Structure

Step		Function	Display	Available Para
3	Press and hold the BMI/Tare key for five seconds until <i>HP1=0</i> appears	Enters the Deep Programming Mode - shows optional feature one. There are six options in this parameter, all set to 0 at the factory. Do not change these settings. Press the REWEIGH key to continue to Step 4	HP1=0 HP2=0 HP3=0 HP4=0 HP5=0 HP6=0	Hold the Kg-Lb key for browsing through the options. Double click on the Kg-Lb key to change the option value. Single click the Kg-Lb key again to advance to the next option. Press the REWEIGH key to jump to the next step. These are factory set to 0 - do not change.
4		Zero Tracking Time	trAC-t <-> 30	Zero Tracking Time X 0.1 sec (30 = 3 seconds)
5		Zero Tracking Range	trAC-r <-> 2	Zero Tracking Range X DIV/4 (2 = 0.5 DIV)
6		Auto-Zero Negative Weight	nEG-t <-> 20	Auto-zero of negative weight value time X 0.1 sec (20 = 2 seconds)
7		High Absolute Zero	HI-Abs <-> 2	Absolute high limit for zero in % of FS
8		Low Absolute Zero	LO-Abs <-> 2	Absolute low limit for zero in % of FS
9		High Relative Zero	HI-rel <-> 2	Relative high limit for zero in % of FS
10		Low Relative Zero	LO-rEL <-> 2	Relative low limit for zero in % of FS
11		Filter Speed	SPEEd <-> 4	Filter Speed - leave set to four
12		Filter Coefficient	FILtEr <-> 4	Filter Coefficient - leave set to four
13		Stability Control	StAbLE <-> 64	Stability Control - leave set to 64
14			StArt of SAve	If no changes were made in the parameters, the display will automatically <i>StArt</i> and then return to normal weighing mode. If a parameter was changed, the display will show <i>SAve</i> - then press the REWEIGH key to save the new parameters.
15	Re-install the programming / calibration jumper that was removed at the beginning of the procedure.		Display will show <i>COOn En</i> as long as the jumper is not in place. Replace jumper to show weight.	

Table 4-2. Deep Programming Mode Menu Structure

5.0 Scale Calibration

Before you can calibrate the scale, verify and set all scale parameters which are noted in “Scale Configuration” on page 7.

Remove the configuration/calibration jumper (see page 7). Turn the scale on. While *StArt* is displayed, press and hold both the **Kg-Lb** and the **REWEIGH** keys until *CAL* is displayed.

NOTE: *The calibration weight must be no less than 60 lb (28 kg) and no more than 300 lb (135 kg).*

The following table illustrates the calibration procedure.

Step		Function	Display	Available Parameters
1	Turn the scale on. While <i>START</i> is displayed, press and hold the Kg-Lb and REWEIGH keys until <i>CAL</i> is displayed.	Enters into calibration mode	<i>StArt</i>	The scale automatically advances to Step 2.
2		Cal mode entered	<i>CAL</i>	To advance to the next step, press the REWEIGH key.
3		Gravity value at the point of calibration	<i>GrAv</i> <-> 9.8062	Use the numeric data entry (See Section 4.0 for more information on Gravity Correction) to change the value. To advance to the next step, press the REWEIGH key.
4		Sets the value of the calibration weight you are going to use for calibrating the span value of the scale.	<i>LOAd</i> <-> XXX.X	Use the numeric data entry (explained in “Numeric Data Entry” on page 8) to set a calibration weight. To advance to the next step, press the REWEIGH key.
5			<i>CLEAR</i>	Clear the platform and be sure of the scale's stability. To advance to the next step, press the REWEIGH key.
6	Calibrate Zero		----- <i>PUT</i> <-> <i>XXXX</i>	Place the requested weight on the scale. This will display for a few seconds. To advance to the next step, press the REWEIGH key.
7	Calibrate Span		<i>CAL</i> <i>FAC tOr</i> <-> X.XXX	This will be displayed for a few seconds and shows the current calibration factor. To advance to the next step, press the REWEIGH key.
8			<i>SAvE</i>	To save the new calibration, press the REWEIGH key. To exit without saving the calibration press the ZERO key.
9			<i>dONE</i>	The scale displays that it has saved that calibration value and automatically advances to the last step.
10			<i>StArt</i>	The scale reboots.
11			<i>Con En</i>	Replace the configuration jumper.

Table 5-1. Calibration Menu

6.0 Gravity Correction

The Rice Lake Platform Fitness Scale features a function that allows correction for gravity differences between locations if it is used in an area different from where it was calibrated.

If you plan to use the scale in a location different from that in which it was calibrated, you will need to first determine the gravity values, in meters per second² (m/s²) for both the calibration location and the location the scale will be used (point-of-use). These two values are entered into the scale during calibration and setup. If you do not wish to use gravity correction (ie: the scale is going to be used where it was calibrated), then simply enter the same value, such as 9.8062 for both the calibration and point of use gravity values.

NOTE: Do not enter 0 for either value.

Gravity varies from place to place on the earth and is affected most by the location's latitude and altitude. Gravity decreases as you move closer to the equator, and as you go higher in altitude. Several other factors, including tidal affects, local anomalies, and buoyancy, also affect gravity's pull on an object but to a much lesser extent.

One way to determine gravity values is to use an online service such as those provided by the *National Geophysical Data Center* (www.ngdc.noaa.gov) for the US or Measurement Canada's web site, (www.ic.gc.ca). These sites allow you to enter latitude and longitude information and receive the estimated gravity values.

Another way is by using the following formula:

$$g = 9.780318(1 + 0.0053024\sin^2L - 0.0000058 \sin^22L) - .000003085H$$

Where: g = gravity in m/s²

L = latitude in radians (multiply degrees by 0.0174533 to get radians)

H = altitude in meters

Once you have the gravity values, make sure they are in meters per second (m/s²). For instance, if the value you have is in milligals (such as those derived from the National Geophysical Data Center web site), you will need to divide your value by 100,000 to get m/s². Your values should be between 9.7 and 9.9 (9.8062 is the gravity value for 45° N Latitude at sea level).

The calibration value is entered during the calibration before placing weights on the scale. After calibration, go into the programming mode and enter the point of use gravity value. Again, if you do not want to use gravity correction, enter the same value in both places.

NOTE: The gravity correction function has not been evaluated by NTEP or Measurement Canada, therefore it is up to the scale dealer to ensure the device is accurate at the intended point of use.

7.0 Sealing of the Unit

The Rice Lake Platform Fitness Scale is an NTEP certified scale. To maintain NTEP certification, the unit must not be opened. Weights and Measures stickers are used to seal the unit and prevent it from being opened.

Whoever installs this scale is responsible for placing stickers on the unit. Examples of a unit that has been sealed are shown below.

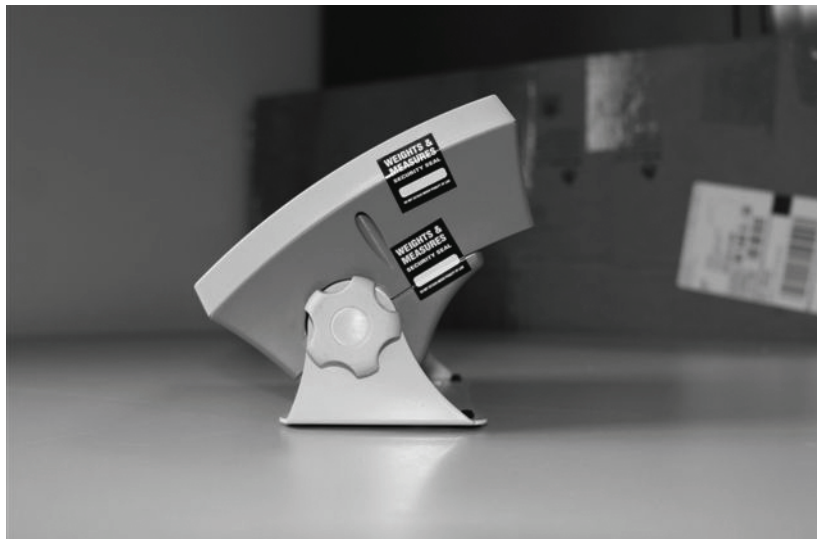


Figure 7-1. Weights and Measurement Stickers



Figure 7-2. Weights and Measurement Stickers Examples

8.0 RS-232 Communication

The scale comes with an RS-232 port which enables weight data to be transmitted to other equipment, such as a computer or printer. The RS-232 cable with DB-9 connector (PN 100719) is available from Rice Lake Weighing Systems. Figure 2-1 on page 2 shows where the RS-232 connection is.

The RS-232 parameters are 9600 baud (selectable in the programming mode), 8 data bits, 1 stop bit, no parity and no handshaking.

There are three methods of communication:

- Pushbutton keypad print
- Standard remote protocol
- Escape protocol

8.1 Pushbutton Keypad Print

With a stable, in-range weight, press and hold the **Kg-Lb/Print** key for at least three seconds, or until the scale emits two quick beeps. Note that if the scale does not beep after five seconds, then release the button as the weight was either in motion, or out of range.

- The scale will send out the following 21 character string:

```
xxxxxxxx<SP>uu<SP>mmmmm<SP><CR><LF>
```

Where:

xxxxxxxx is the weight with decimal point and " - " sign, if negative uu is the unit (lb or kg).

mmmmm is the mode (gross or net)

Examples:

```
-10 Lb net = <SP><SP><SP><SP>-10.0<SP>lb<SP><SP>Net<SP><SP><SP><CR><LF>
```

```
10 Lb gross = <SP><SP><SP><SP><SP>-10.0<SP>lb<SP>Gross<SP><CR><LF>
```

8.2 Standard Remote Protocol (configuration option #9 set to 1)

When connected to a computer, there are five commands that can be used in the standard remote protocol to communicate with the scale. They are:

- t - tare the scale. If in gross mode, will tare and go to net mode. If in net mode, will remove tare and return to gross mode.
- w - the scale sends the actual weight to the computer.
- i - the scale sends the software ID of the scale.
- z - the scale will be set to zero (0.0) if possible.
- p - the scale sends the same data as a pushbutton keypad print.

The format of the returned data will be the same as noted under the pushbutton keypad print. Note that the w and p commands will not return a value if the scale is in motion, or displaying an invalid weight.

8.3 ESC Protocol (configuration option #9 set to 0)

The ESC Protocol differs from the standard protocol and enables weight and unit of measure data to be transmitted for full integration into electronic medical records or for diagnostic testing of the battery life, load cells, etc. The scale will only transmit data upon receiving the proper command set.

You can test the command set and review the scales' response using either PROCOMM Plus or the Dietary/Fitness files found on our web site, www.ricelake.com/health. If using PROCOMM Plus, we recommend you set up "hot" keys for the commands. Refer to Table 10-1 for a listing of those commands.

An Escape Protocol is where the escape <ESC> is used to indicate that there is a command following and not just data.

Table 10-1 lists a complete list of ESC commands that are used with the scale.

Command/Response	ESC Character	ESC value with Parameters	Description
Reading	R	R	This value tells the PC that the scale is sending a reading. Immediately following this will be the value that is sent Example: <ESC>R<ESC>E <ESC>R<ESC>W0200.5<ESC>Nm<ESC>E
Weight	W	Wnnn.n	This is the patient's weight (ie: W0200.5 means 200.5 lb). If the scale is overloaded, the scale will return the value of 999.9.
Units	N	Nc	This indicates in which unit the values have been taken (m=metric, c=constititutional)
End of Packet (EOP)	E	E	This indicates that the end of the command/data packet has been reached
Diagnostics (request)	A	Accc	This is the request for a diagnostic test on certain parts of the scale such as the battery life, loadcells, etc. <ul style="list-style-type: none"> AD value (ADC) = E06=AD is too high, E07=AD is too low Overload (OVL) = E10 Battery (BAT) = E4U= (Bat ok) or E4L (Bat Low, but still usable - 1 bar left on the indicator) Calibration information OK (CAL) = E11=Calibration was not okay and the user needs to recalibrate.
Diagnostics (response)	Z	Zccc	This will be the response to the diagnostics done on the scale. Values will include any error codes to indicate what is wrong with the scale, or all zeros (Z000) to indicate that all is well.
Control (set a value)	C	Cccc=c	This is to set the value of the scale's global settings <ESC>CUOM=m<ESC>E will set the unit of measurment to KG <ul style="list-style-type: none"> Unit of measurement (metric or constitutional) (UOM) = c (m or c)

Table 8-1. RS-232 Communication Parameters

If you're using the Rice Lake files, please follow the instructions below.

1. Go to www.ricelake.com/health and download the Rswin.exe and Inbar.ini files located in the downloads section of the web site and download them to your computer.
2. Ensure that the scale is connected to the computer via RS-232 cable.

3. Double click on the Rswin.exe file and the following screen appears.

Click on FILES and in dropdown menu, select LOAD CONFIGURATION as noted in Step 4

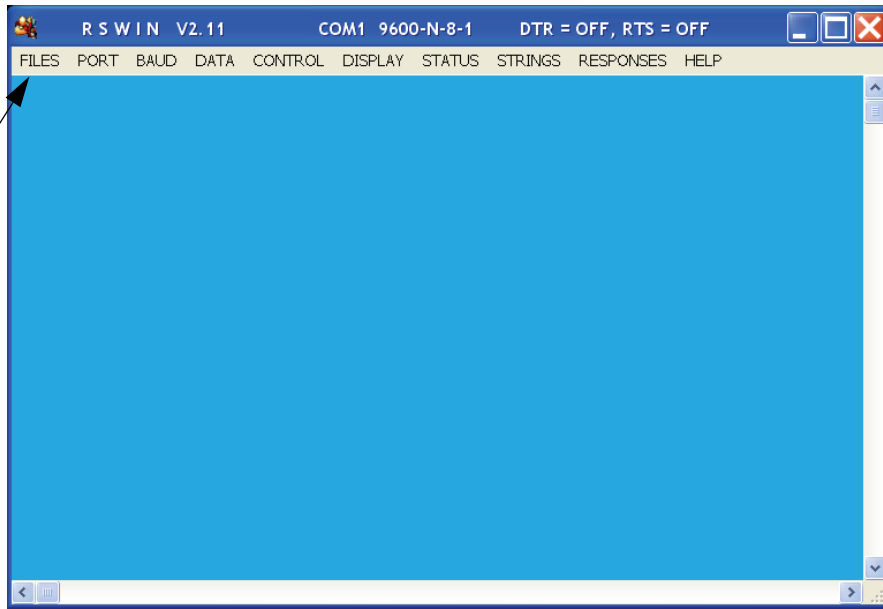


Figure 8-1. Rswin Screen

4. Click on *FILES* and in the dropdown menu, select *LOAD CONFIGURATION*. At this time double click on the file, *Inbar.ini*.
5. Click on *STRINGS* and the following screen appears.

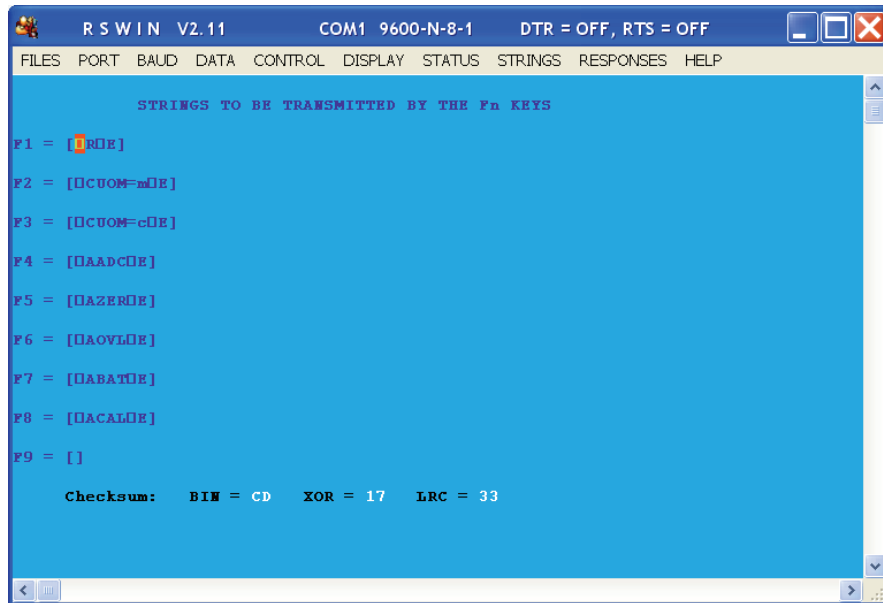


Figure 8-2. Strings to be Used in the RS-232 Transmission

This screen is showing that the function keys are already pre-programmed with command sets. For example, pressing the F1 key is the same as sending <ESC>R<ESC>E.

6. Click on *DISPLAY* and in the drop down menu, select either *HEX* or *ASCII*.

Examples of what you would see in the HEX screen are shown in Figure 8-3.

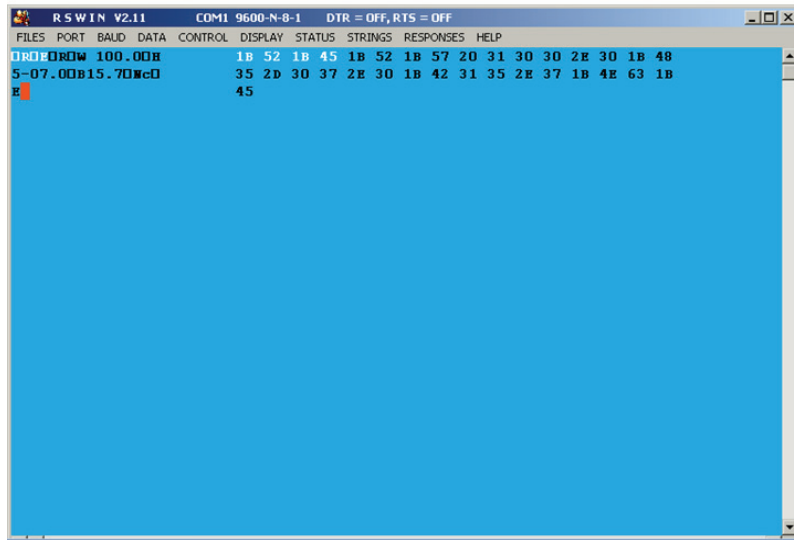


Figure 8-3. HEX Screen Example

Examples of what you would see in the ASCII screen are shown in Figure 8-4.

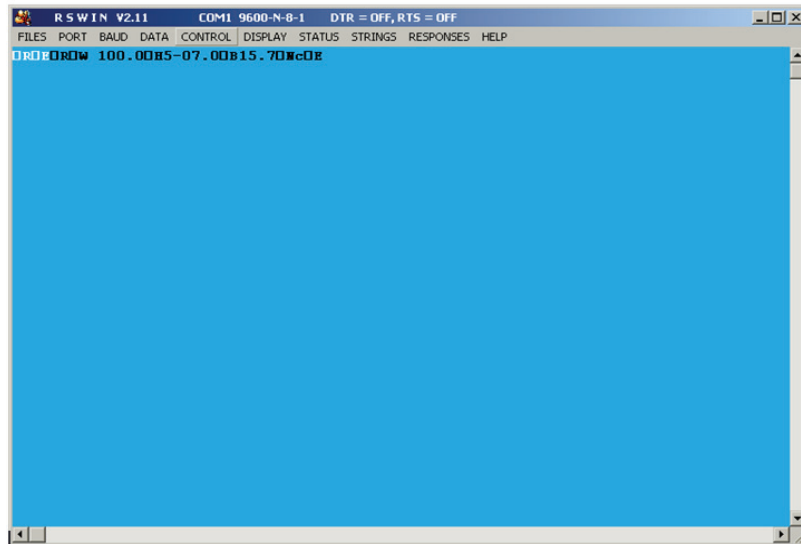


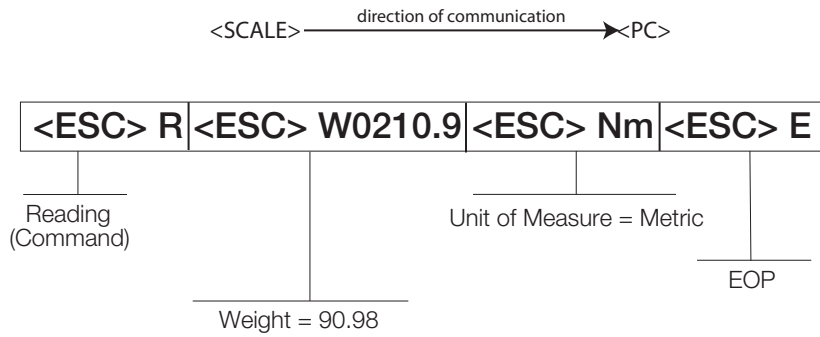
Figure 8-4. ASCII Screen Example

8.4 Sample and Explanation of ESC Protocol

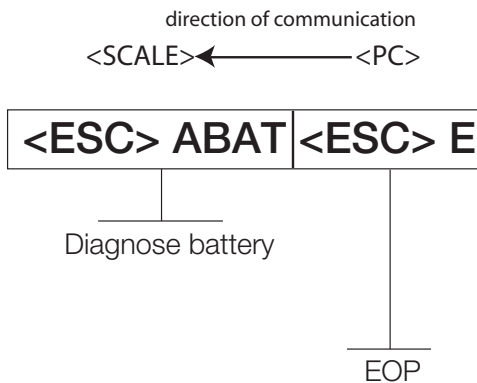
When the scale measures weight and sends this over the communications line to the PC, the string will look like this.

<SCALE> -----<PC>

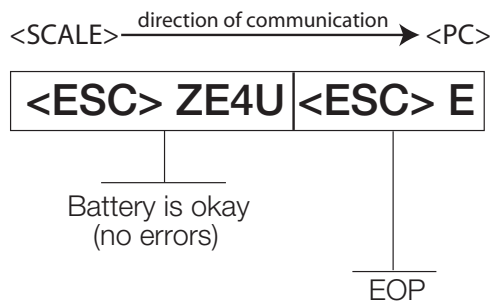




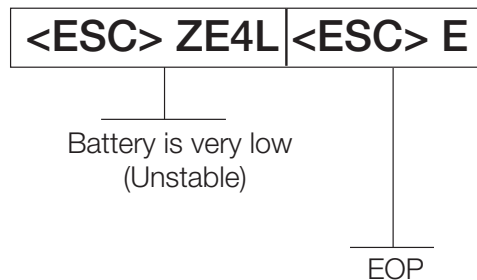
When the user wants to diagnose any problems with the scale, the operator will have to ask the scale to send the error data (if any exists). This is done with the Diagnostics (request) command and will look like this:



If the battery is okay, the scale will reply with the following value:



If the battery is critically low, it will reply with:



9.0 Troubleshooting & Testing

Refer to the following instructions to check and correct any failure before contacting service personnel.

Symptom	Possible Cause	Corrective Action
Scale does not turn on	Dead battery	Connect the scale to a power source.
	Faulty electrical outlet	Use a different electrical outlet.
	Bad power supply	Replace adaptor.
Questionable weight or the scale does not zero	External object is interfering with the scale	Remove the interfering object from the scale.
	Display did not show 0.0 before weighing	Zero the scale and begin the weighing process again.
	Scale is not placed on a level floor	Ensure the scale is level and begin the weighing process again.
	Scale is out of calibration	Check the weight with a known weight value.
	Improper tare	Place the tare item on the scale. Once the weight of the item is displayed, press TARE .
The display shows a <i>STOP</i> message	The load on the scale exceeds the capacity of the scale	Remove the excess weight and use the scale according to manufacture's specs.
The display shows <i>LO Bat</i> message	The battery is low	Recharge the battery.
The display shows Err message as detailed below		
Err 2	Low saturation state (low A/D)	The load cell is not connected properly. Check the cables and mechanical connections. If the problem persists, replace the set of load cells.
Err 3	High saturation state (high A/D)	See Err 2
Err 6	Unstable weight. Cannot calibrate	Check the load cells' mechanical surroundings and see that nothing touches them and that the cables are properly welded.
Err 7	Mathematical error; division by zero. Cannot calculate calibration factor.	This error will show when trying to calibrate the unit with no calibration weight on the unit.
Calibration or configuration settings are messed up	Pushed the wrong keys	Reset to factory defaults. See Page 9 for instructions.
The display shows a <i>Con En</i> message	The configuration jumper is not in place.	Install the configuration jumper on both pins. (see Figure 4-1 on page 7 for more information).

Table 9-1. Troubleshooting Table for the Rice Lake Scale Line

9.1 Test Mode

The test mode menu is a special mode used for checking three very important parameters which are useful in knowing the system's state and for troubleshooting. The configuration/calibration jumper must be removed before you can enter this mode (see Figure 4-1) and power must be off.

To access the test mode parameter, press and hold the **REWEIGH + On-Off/Zero** keys simultaneously until middle arrows appear in the display.

The test mode has three parameters. They are:

- Weighing
- Internal count
- Battery indication.

Alternating between the parameters is performed by pressing the **REWEIGH** key.

Press the **Kg-Lb** key to zero the scale while displaying weight (*TEST*).

Press the **Kg-Lb** + **REWEIGH** to exit Test mode.

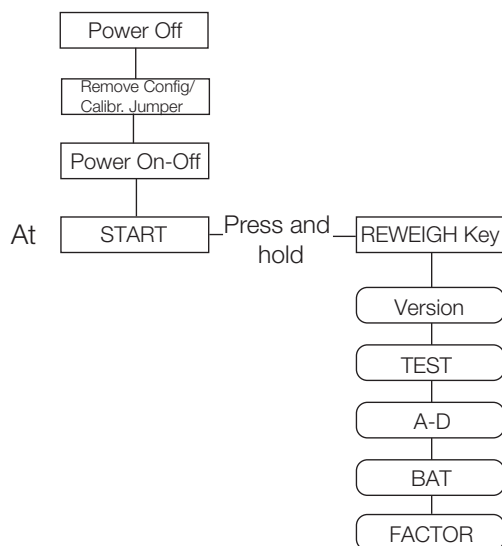


Figure 9-1. Test Mode Menu Structure

Table 9-2 lists the various display messages when testing the scale.

NOTE: <-> means the display toggles between the two values.

Step		Function	Display	Available Parameters
1	Turn the scale on. While <i>StArt</i> is displayed, press and hold the REWEIGH key.	This enters into the test mode of the scale.	StArt	The scale automatically advances to Step 2.
2		Identifies the software ID	IdEnt <-> 11007	Press the REWEIGH key to advance to the next step.
3		Shows the current weight value	tESt <-> 0.0	To zero the display, press the Kg-Lb key. To advance to the next step, press the REWEIGH key.
4		Shows the current A/D count	A-d <-> XXXX	To advance to the next step, press the REWEIGH key.
5		Checks for current battery level	bAt <-> XXX or nO bAt	If the <i>nO bAt</i> is displayed, there are not batteries in the unit, or the unit is operating on its external AC adaptor. To advance to the next step, press the REWEIGH key.
6		This shows the calibration factor.	FAcTOr <-> XXXXX	Press the REWEIGH key to return to the top of the test menu. To exit test mode, press the REWEIGH and Kg-Lb key simultaneously, or turn off the indicator.

Table 9-2. Test Mode Menu

10.0 Maintenance

The following section provides instructions for maintaining and cleaning the Dietary/Fitness scale. Maintenance operations other than those described in this section should be performed by qualified service personnel.

10.1 Basic Maintenance

Before the first use of the scale and after periods of non-use, check the scale for proper operation and function. If the scale does not operate correctly, contact qualified service personnel.

Go through the following steps for basic maintenance.

1. Check the overall appearance of the entire scale for any obvious signs of damage, abuse, etc.
2. Inspect the condition of the AC adaptor for cord cracking or fraying or for broken or bent prongs.

10.2 Cleaning

Proper care and cleaning is essential to ensure a long life of accurate and effective operation. Before beginning the cleaning process, disconnect the scale from the AC power source.

1. Clean all external surfaces with a clean, damp cloth or tissue. Mild soap and water solution may be used. Dry with a clean soft cloth.
2. Do not immerse the scale into cleaning or other liquid solutions.
3. Do not use Isopropyl alcohol or other solutions to clean the display surface.

11.0 Platform Fitness Scale Specifications

Power

120 VAC-9VDC-60Hz / 230 VAC-9VDC-50Hz

Battery Type

Sealed lead acid battery

Battery Use

75 hours

Automatic power-off can be configured

Data Communications

RS-232 with RJ-45 jack

Selectable baud rate, default - 9600

8 bits

No parity

1 stop bit

No handshaking

Environmental

Operating Temperature

50 to +104°F (14 to 40°C)

Storage Temperature

32 to 158°F (0 to 70°C)

Humidity

85% relative humidity

Capacity and Graduation

Platform Fitness Scale

600lb (270kg) 0.1lb (0.05kg)

Certifications and Approvals

RoHS Compliant



NTEP CC# 09-098

Accuracy Class III $n_{max}: 6\ 000$



Measurement Canada

AM-5759

Accuracy Class III $n_{max}: 6\ 000$

Dimensions

Platform Dimensions

14.5 in W x 14 in L x 3 in H

For More Information

System Manuals

- *Dietary/Fitness Scale Operation Instructions*, PN 112174

Literature

- *Medical Scales, Dietary/Fitness, 4 Color*, PN 114089

Web Site

- <http://www.ricelake.com/health>

Contact Information

Hours of Operation

Knowledgeable customer service representatives are available 6:30 a.m. - 6:30 p.m. Monday through Friday and 8 a.m. to 12 noon on Saturday. (CST)

Telephone

- Sales/Technical Support 800-472-6703
- Canadian and Mexican Customers 800-321-6703
- International 715-234-9171

Immediate/Emergency Service

For immediate assistance call toll-free 1-800-472-6703 (Canadian and Mexican customers please call 1-800-321-6703). If you are calling after standard business hours and have an urgent scale outage or emergency, press 1 to reach on-call personnel.

Fax

Fax Number 715-234-6967

Email

- US sales and product information at prodinfo@ricelake.com
- International (non-US) sales and product information at intlsales@ricelake.com

Mailing Address

Rice Lake Weighing Systems
230 West Coleman Street
Rice Lake, WI 54868 USA

Rice Lake Platform Fitness Scale Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for two years.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, *Protecting Your Components From Static Damage in Shipment*, available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

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SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

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RICE LAKE WEIGHING SYSTEMS • 230 WEST COLEMAN STREET • RICE LAKE, WISCONSIN 54868 • USA



230 W. Coleman St. • Rice Lake, WI 54868 • USA
U.S. 800-472-6703 • Canada/Mexico 800-321-6703
International 715-234-9171

www.ricelake.com
[mobile: m.ricelake.com](http://m.ricelake.com)

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