

# RL101

*Below-the-Hook Scale*

## Technical Manual



© Rice Lake Weighing Systems. All rights reserved.

Rice Lake Weighing Systems® is a registered trademark of  
Rice Lake Weighing Systems.

All other brand or product names within this publication are trademarks or  
registered trademarks of their respective companies.

All information contained within this publication is, to the best of our knowledge, complete and  
accurate at the time of publication. Rice Lake Weighing Systems reserves the right to make  
changes to the technology, features, specifications and design of the equipment without notice.

The most current version of this publication, software, firmware and all other product  
updates can be found on our website:

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

# Revision History

---

This section tracks and describes manual revisions for awareness of major updates.

Revision	Date	Description
A	October 16, 2023	Initial Release
B	September 09, 2024	Updated dimension drawings

*Table i. Revision Letter History*



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

# Contents

<b>1.0 Introduction</b>	<b>7</b>
1.1 Safety	7
1.2 Technical Specifications	8
1.3 Single Channel Connection	8
1.4 How to Access the Programming Menu	9
1.5 How to Save Parameters and Exit the Menu	9
1.6 How to Browse the Menu	10
<b>2.0 Configuration</b>	<b>11</b>
2.1 Quick Calibration (CAL)	12
2.2 Reset Pre-Tare (0.Cal)	13
2.3 Location Gravity (Grav)	14
2.4 Configure Serial Ports (Serial)	15
2.4.1 PC Communication (Com.PC)	15
2.4.2 Advanced Configuration (ADVAnC)	17
2.5 Weighing filters (filter)	19
2.5.1 Overhead Weighing (dyn.o)	19
2.5.2 Tank Weighing with Vibration (Liquids) (Slow)	19
2.5.3 Filing (Dos.0)	19
2.5.4 Filter for Manufacturer Use (Radc)	19
2.5.5 Table and Floor Scales (Stand)	19
2.5.6 High Precision Scales (hi.res.0)	19
2.6 Adjusting the Display (sScreen)	20
2.6.1 Set Backlight (bak.Lit)	20
2.6.2 Set Brightness (briGHT)	20
2.7 Auto off (autoff)	21
2.8 Factory configuration reset (RESET)	22
2.9 Diagnostics (diaG)	23
2.10 Advanced (AdvanC)	24
2.10.1 Calibration Parameters (CAL.PAR)	24
2.10.2 Complete Calibration (CAL.adv)	26
2.10.3 Metrological parameter (metrol)	29
2.10.4 Reactivating the Totalization or Print Function (REACT)	30
2.10.5 Permanent Keyboard Lock (LoCK.kb)	30
2.10.6 PIN required to Access Programming Menu (Pin.tec)	30
2.10.7 PIN required to Access PIN to User Menus (PIN.USE)	30
2.10.8 Factory Reset (DFLT.t)	30
<b>3.0 Technical Drawings</b>	<b>31</b>
3.1 Dimensional Drawings	31
3.1.1 RL101-3k	31
3.1.2 RL101-6k and RL101-12k	32
3.2 PCB Drawings	33
<b>4.0 Appendix</b>	<b>34</b>
4.1 Error Messages	34
4.2 FAQ (Frequently Asked Questions)	34
4.3 Parameter Reference	35



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

**5.0 Replacement parts..... 37**

5.1 Main Assembly ..... 37

5.2 Enclosure Subassembly ..... 38

5.3 Spare Parts ..... 39



*Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at [www.ricelake.com/training](http://www.ricelake.com/training) 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](http://www.ricelake.com/webinars)*

# 1.0 Introduction

This manual discusses several aspects about the RL101 below-the-hook scale (RL101 scale), including: configuration menu, parameters, wiring diagrams and errors messages.



Manuals are available from Rice Lake Weighing Systems at [www.ricelake.com/manuals](http://www.ricelake.com/manuals)

Warranty information is available at [www.ricelake.com/warranties](http://www.ricelake.com/warranties)

## 1.1 Safety

### Safety Definitions:



**DANGER:** Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. Includes hazards that are exposed when guards are removed.



**WARNING:** Indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death. Includes hazards that are exposed when guards are removed.

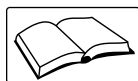


**CAUTION:** Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.



**IMPORTANT:** Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.

## General Safety



**Do not operate or work on this equipment unless this manual has been read and all instructions are understood. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Rice Lake Weighing Systems dealer for replacement manuals.**



### WARNING

**Failure to heed could result in serious injury or death.**

**Read this manual carefully before carrying out any handling operations or lifting any loads.**

**Never exceed the rated load limit of the unit.**

**Never use the scale in environments where there is the danger of fire or explosion.**

**Do not make alterations or modifications to the unit.**

**Never use the RL101 scale when it no longer fulfills the safety criteria.**

**Never clean the RL101 scale with solvents, aggressive substances or flammable products.**

**Never wash the suspended RL101 scale with direct water jets.**

**Never pour liquids on the RL101 scale.**

**Do not expose the suspended RL101 scale to atmospheric agents (sun, rain, etc.).**

**Do not allow minors (children) or inexperienced persons to operate this unit.**

**Do not use for purposes other than weight measurement.**

**Do not place fingers into slots or possible pinch points.**

**Do not use any load-bearing component that is worn beyond 5% of the original dimension.**

**Do not use this product if any of the components are cracked.**

**Do not remove or obscure warning labels.**

**Do not remove or replace supplied shackles and hooks.**

**Keep hands, feet and loose clothing away from moving parts.**

**To achieve a correct weighing result, the load must be raised by at least 2-5 in from the ground.**

**Before using the RL101 scale, ensure it is in proper working order.**

**Apply the load to the hook only when the load is resting on the ground.**

**Use the RL101 scale in non-condensing environments with moderate temperature and humidity levels.**

**Use the RL101 scale where there are no vibrations.**

**Never move the sample (load) with scale inline. The RL101 scale is a lift and weigh device designed to capture static weighments.**

## 1.2 Technical Specifications

Item	Description	
Case	ABS and Steel	
Screen	Backlit LCD Digit height = 25 mm	
Brightness	Five intensity levels	
Keys	Five waterproof keys	
IP Rating	IP54	
Number of Scales	One	
Maximum input current to load cells	120 mA	
Working temperature	14° to 104°F (-10°C /+40°C)	
Power Supply	Battery	Four AA
	Battery Life	Up to 40 hours
Serial Ports	RS232	Two
Number of divisions	100 to 800.000	

Table 1-1. Technical Specifications

## 1.3 Single Channel Connection



**NOTE:** RL101 comes wired with a 6 wire connection in terminal block CELL1. In addition, jumpers J2 and J3 are removed.



**WARNING:** If wiring must be adjusted, ensure the RL101 is powered off before adjusting wiring.

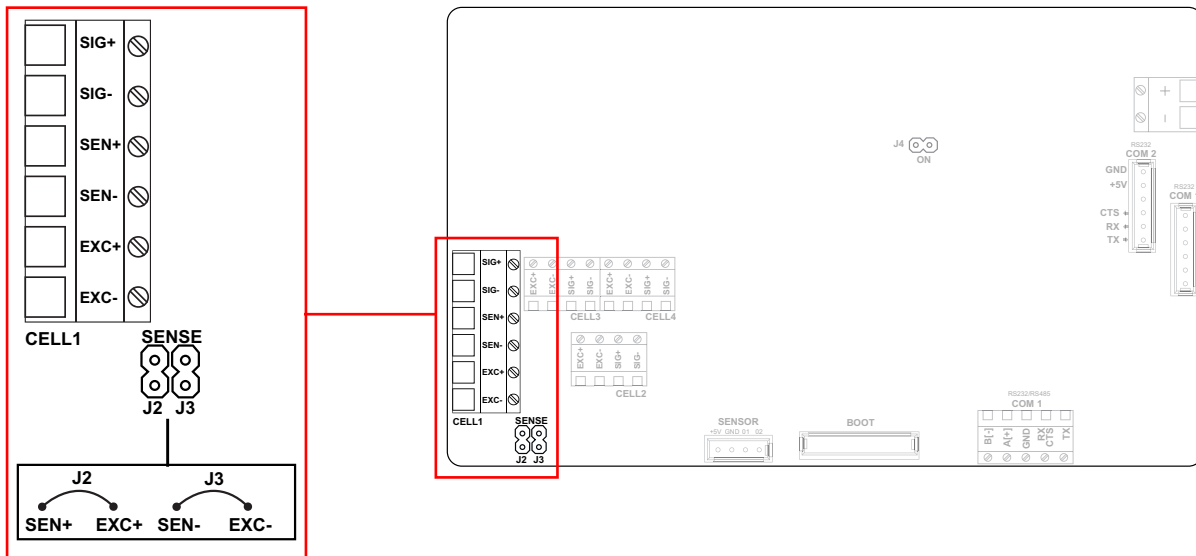
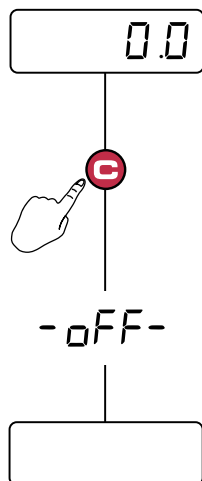


Figure 1-1. Single Channel Connection

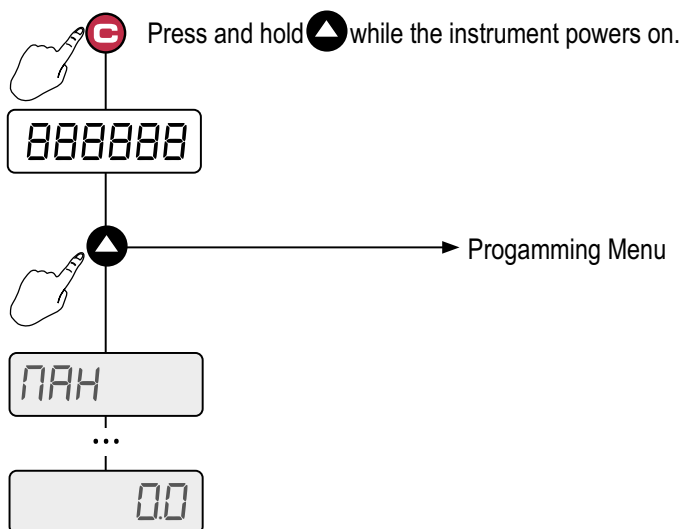


## 1.4 How to Access the Programming Menu

1. Turn off the scale



2. Perform the following:

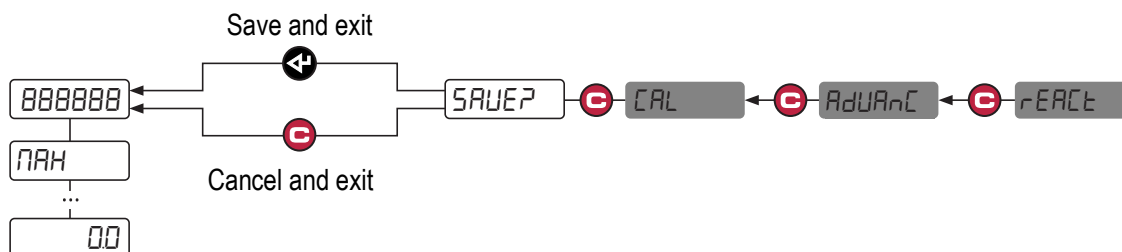


## 1.5 How to Save Parameters and Exit the Menu

To save the programming changes, repeatedly press the **C** key until the message *SAVE?* appears.

Press **▲** to save or **C** to exit without saving.

For example (read from right to left):



## 1.6 How to Browse the Menu

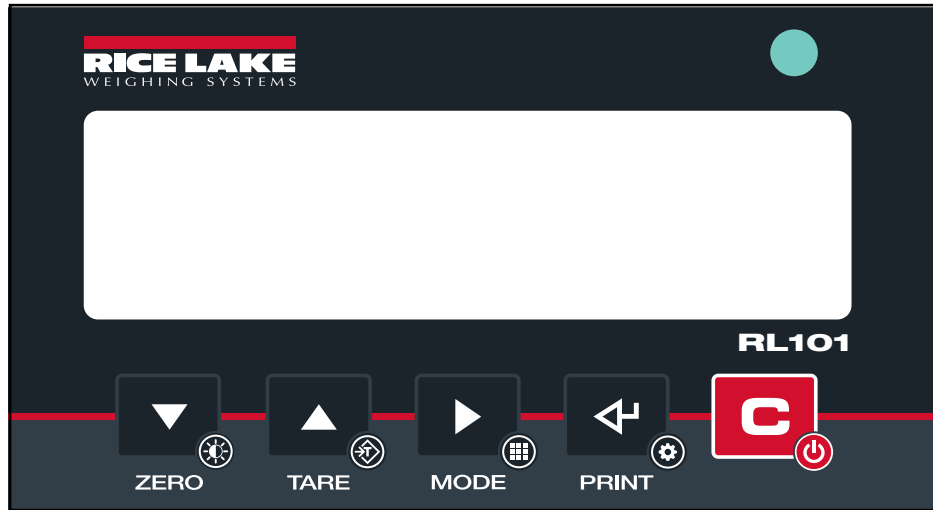


Figure 1-2. RL101 Buttons






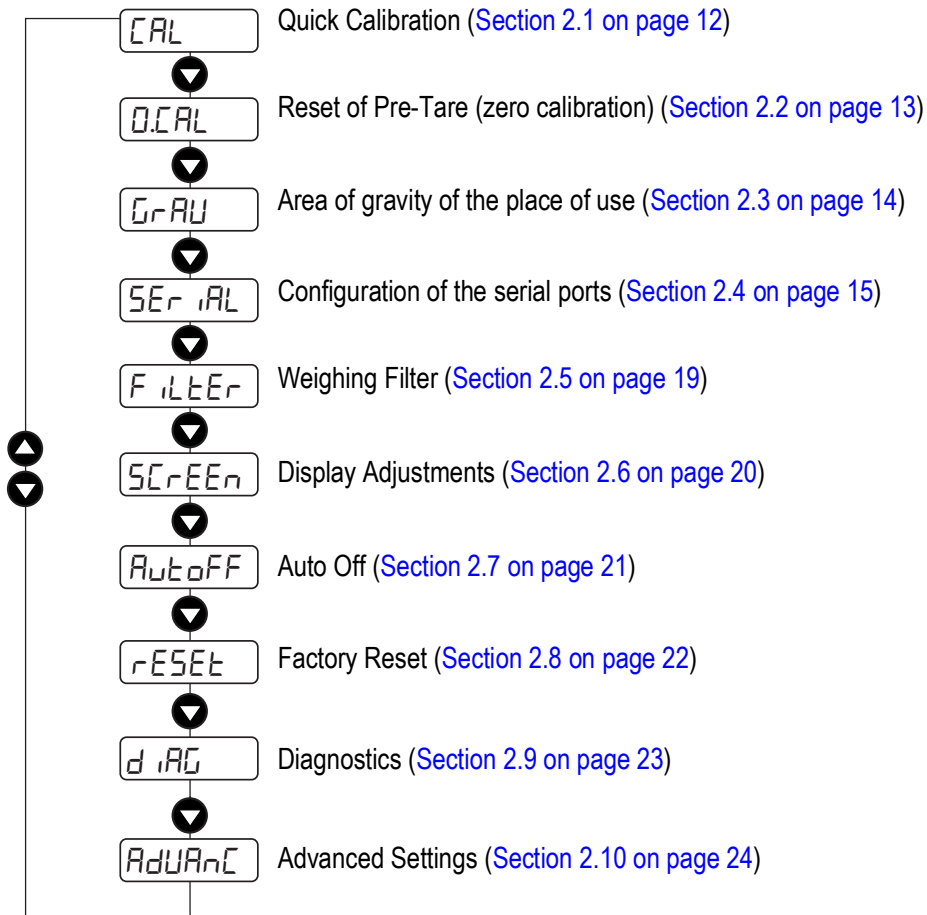
Key	Description
 <p>ZERO</p>	<p>Short Press: Resets the weight on the scale.</p> <p>Long Press: Press for 2 seconds to adjust the screen brightness.</p> <p>Parameter/Menu: Navigates up in menus, parameters or parameter values.</p>
 <p>TARE</p>	<p>Short Press: Tares the scale.</p> <p>Long Press: Press for 2 seconds to enter a preset tare.</p> <p>Parameter/Menu: Navigates down in menus, parameters or parameter values.</p>
 <p>MODE</p>	<p>Short Press: Retrieves the specific function of the operating mode.</p> <p>Long Press: Press for 5 seconds to change operating mode.</p> <p>Parameter/Menu: Navigates right in menus.</p>
 <p>PRINT</p>	<p>Short Press: Activates print function (typically not applicable).</p> <p>Long Press: Press for 5 seconds to enter the configuration menu.</p> <p>Parameter/Menu: Confirms the selected menu/parameter.</p>
	<p>Short Press: Clears the tare.</p> <p>Long Press:</p> <ul style="list-style-type: none"> <li>If pressed for 2 seconds, the RL101 powers off.</li> </ul> <p>Parameter/Menu:</p> <ul style="list-style-type: none"> <li>Returns to previous menu without saving.</li> <li>At save prompt, cancels without saving.</li> </ul>

Table 1-2. RL101 Button Descriptions

## 2.0 Configuration

The indicator contains a seven segment LCD screen that displays weight information while also providing access to menus, sub-menus and parameters. The main menus lead to sub-menus or parameters that are configured using the integrated keypad or remote control. The main menu follows:





How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

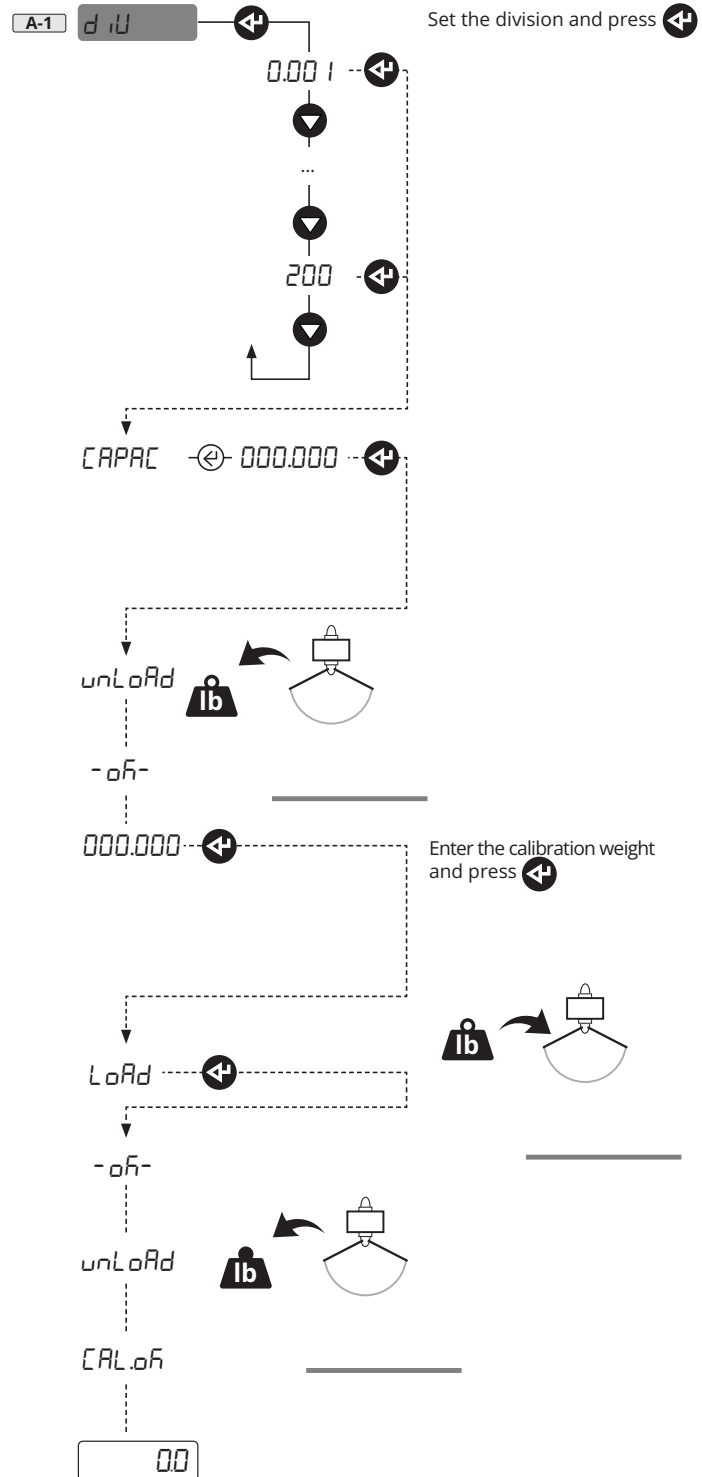
How to save changes:

- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.

## 2.1 Quick Calibration (CAL)



**NOTE:** CAL is used when the system's memory and calibration is reset (Section 2.10.8 on page 30) or a new board is installed. If an existing calibration is present, CAL.PAR (Section 2.10.1 on page 24) opens instead of the CAL.



Main Menu

- A CAL
- B D.CAL**
- C GRAU
- D SERIAL
- E FILTER
- F SCREEN
- G AutoFF
- H rESEt
- I dTAG
- J AdvAnC

How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

Navigate to main menu.

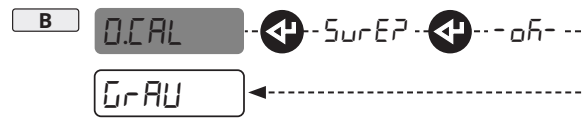
Press . Save? displays.

Press . store displays.

The system saves and returns to weigh mode.

## 2.2 Reset Pre-Tare (D.CAL)





Acquires the zero point.







Main Menu

- A CAL
- B D.CAL
- C **GrAV**
- D SERIAL
- E FILTER
- F SCREEN
- G AUTOFF
- H RESET
- I ID TAG
- J ADVANC

How to browse:


-   Cycles through menus and parameters
-  Advances to next menu
-  Returns to previous menu

How to set a parameter:

-   Increases/decreases values or cycles through parameters
-  Confirms the parameter
-  Returns to previous menu

How to save changes:

Navigate to main menu.

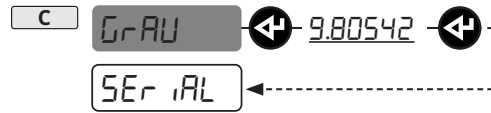
Press . Save? displays.

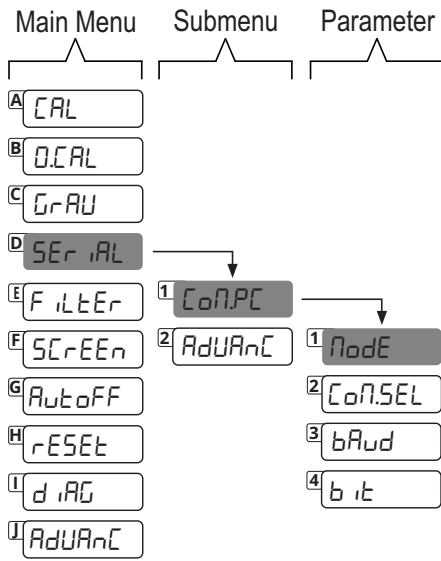
Press . store displays.

The system saves and returns to weigh mode.

## 2.3 Location Gravity (GrAV)

Once the calibration is completed, set the gravity to the location RL101 installation (if different from calibration).





How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

Navigate to main menu.

Press . Save? displays.

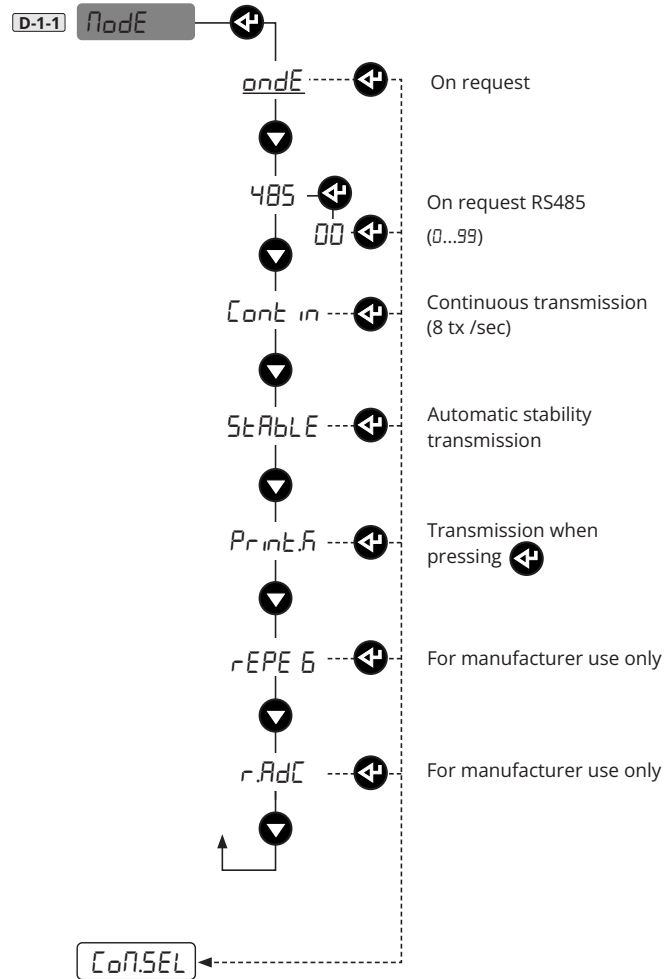
Press . store displays.

The system saves and returns to weigh mode.

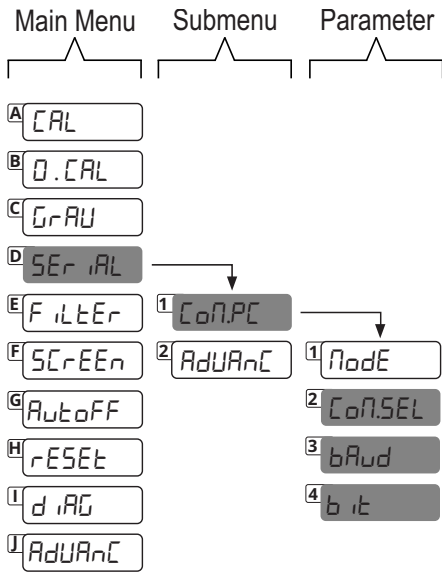
## 2.4 Configure Serial Ports (SERIAL)

### 2.4.1 PC Communication (CON.PC)

#### 2.4.1.1 Select Communication Mode (Mode)



**NOTE:** For communication strings and controls, see RL101 Technical Manual - Serial Protocol. For string type selection, see Section 2.4.2.1 on page 17.



How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

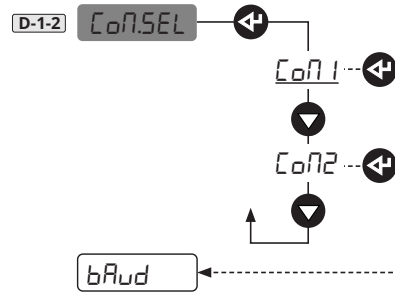
How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

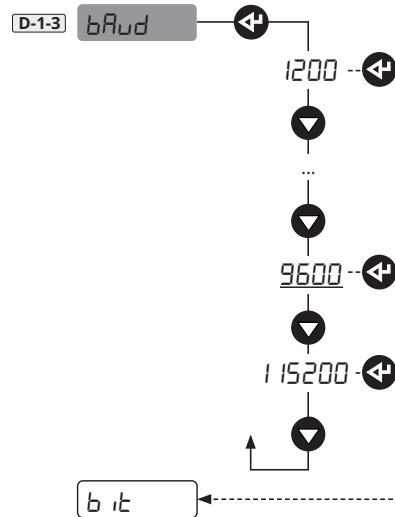
- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.

### 2.4.1.2 Select COM Port for Connection with PC/PLC (CoM.SEL)

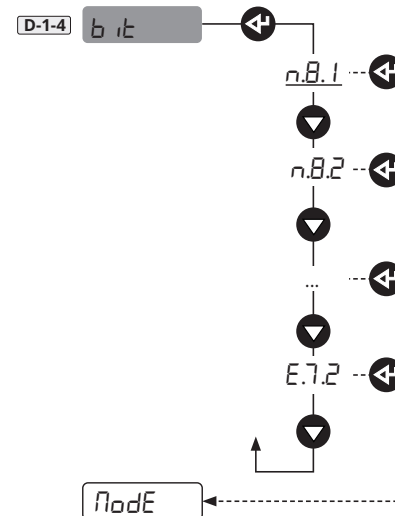


**NOTE:** A communication type is not selected by default.

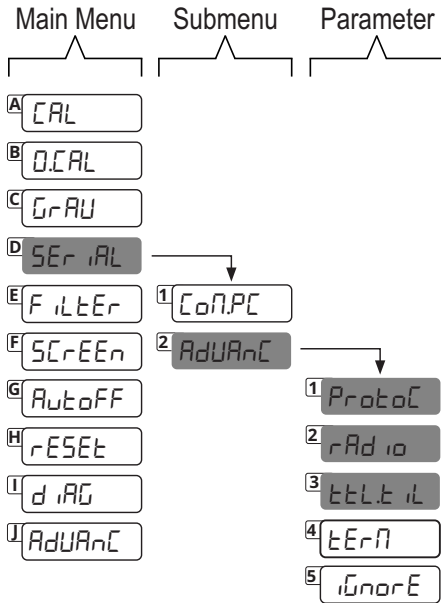
### 2.4.1.3 Select Communication Speed (bAud)



### 2.4.1.4 Select Serial Protocol (b it)







How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

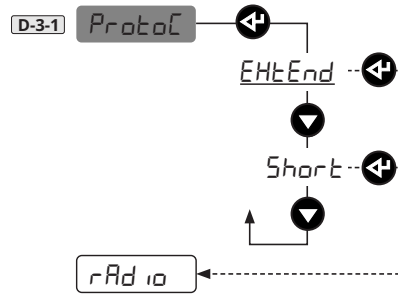
- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.

## 2.4.2 Advanced Configuration (ADVANC)

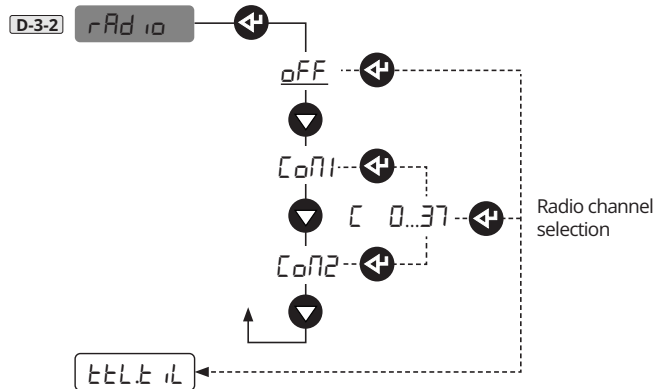
### 2.4.2.1 Select Communication Protocol (PROTOC)



**NOTE:** For communication strings and controls, see RL101 Technical Manual - Serial Protocol.

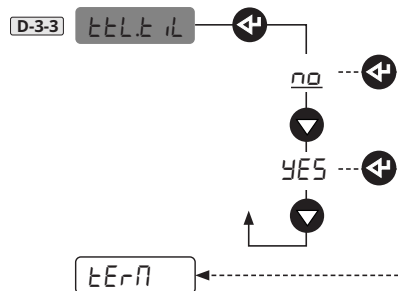
### 2.4.2.2 Connection Port of Radio-frequency Module (RAD IO)

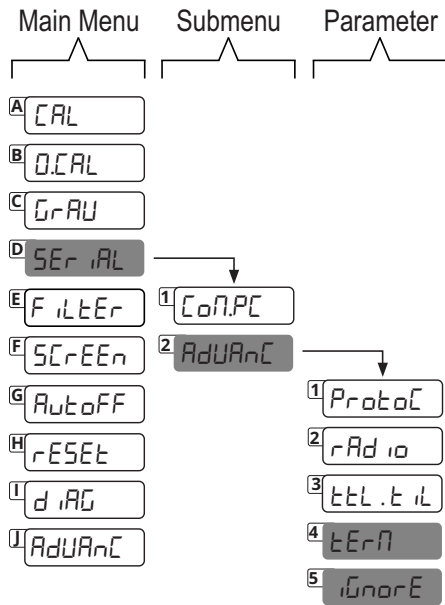
**NOTE:** For manufacturer use.



### 2.4.2.3 TTL Port / Inclinator Activation (TTL.L IL)

**NOTE:** For manufacturer use.





How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

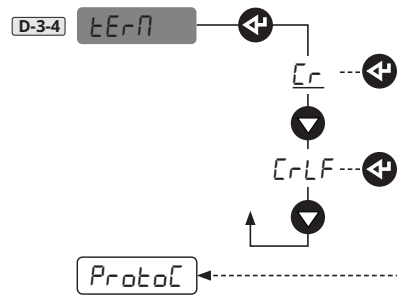
Navigate to main menu.

Press . Save? displays.

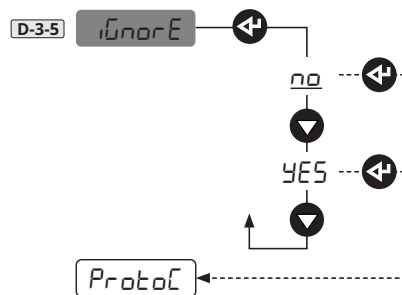
Press . store displays.

The system saves and returns to weigh mode.

### 2.4.2.4 Closing Character of Each Print Line (tErN)



### 2.4.2.5 Ignore Unknown Commands (iGnorE)



**NOTE:** When an unknown command is sent:

- If *no* is selected, the "ERR04" is received.
- If *YES* is selected, the command is ignored (no message).

Main Menu	Parameter
A CAL	
B D.CAL	
C GRAV	
D SERIAL	
E FILTER	
F SCREEN	1 dyn.0
G AutoOFF	...
H RESET	4 dyn.3
I d.AG	5 SLob.0
J AdUAnC	...
	8 SLob.3
	9 doS.0
	...
	12 doS.3
	13 r.Adc.0
	...
	18 r.Adc.5
	19 StAnd.0
	...
	22 StAnd.3
	23 h.irES.0
	...
	30 h.irES.7

How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.

## 2.5 Weighing filters (F ILtEr)

Edits scale reactivity. “0” represents a minor filtering occurrence. Increasing the occurrence rate provides more weight stability.

Weigh several times, changing the occurrence rate until the best compromise, between reactivity and stability is obtained.

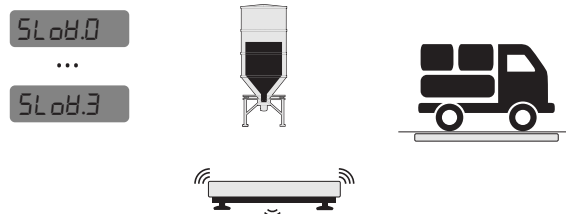


**NOTE:** Filters provide functionality for a variety of applications, however RL101 applications utilize the Overhead Weighing filter (Section 2.5.1).

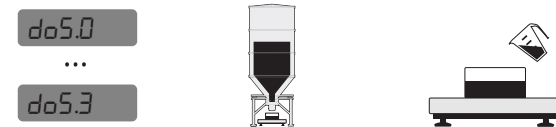
### 2.5.1 Overhead Weighing (dYn . 0)



### 2.5.2 Tank Weighing with Vibration (Liquids) (SLob)



### 2.5.3 Filing (doS . 0)



### 2.5.4 Filter for Manufacturer Use (rAdc)

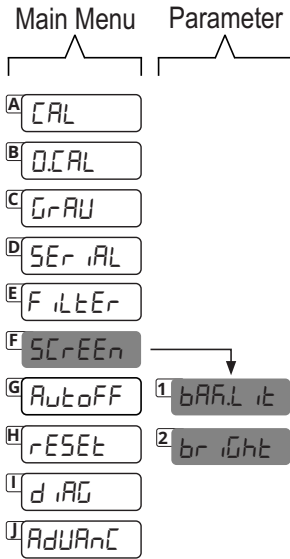


### 2.5.5 Table and Floor Scales (StAnd)



### 2.5.6 High Precision Scales (h.irES . 0)





How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

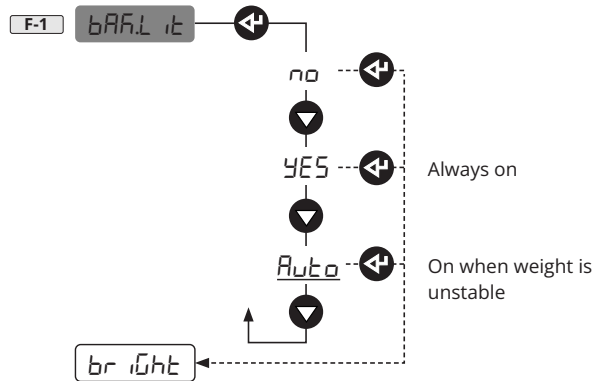
- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

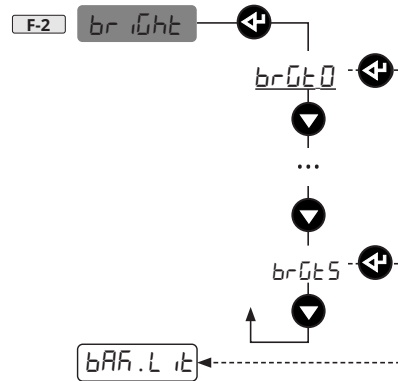
- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.

## 2.6 Adjusting the Display (SCrEEen)

### 2.6.1 Set Backlight (bAF.Lit)



### 2.6.2 Set Brightness (br iGht)



**NOTE:** brGt0 disables the back light.

Main Menu

- A CAL
- B D.CAL
- C GrAU
- D SEr AL
- E F ILtEr
- F SCrEEn
- G AutoFF
- H rESEt
- I d .AG
- J AdUAnC

How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

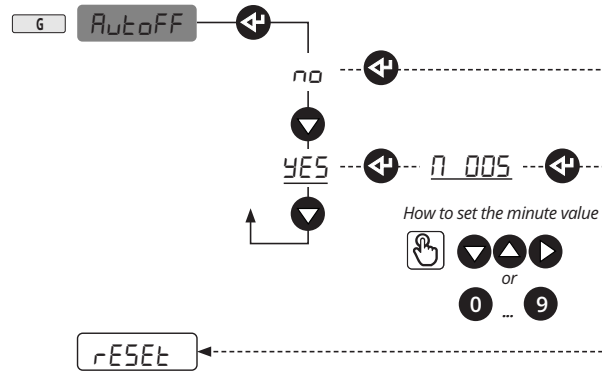
Navigate to main menu.

Press . Save? displays.

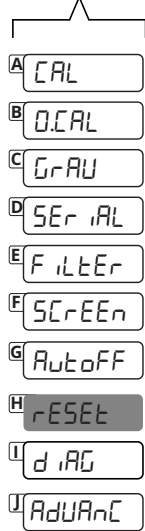
Press . store displays.

The system saves and returns to weigh mode.

## 2.7 Auto off (AutoFF)



Main Menu



How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

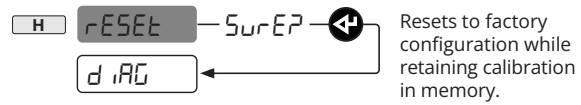
Navigate to main menu.

Press . Save? displays.

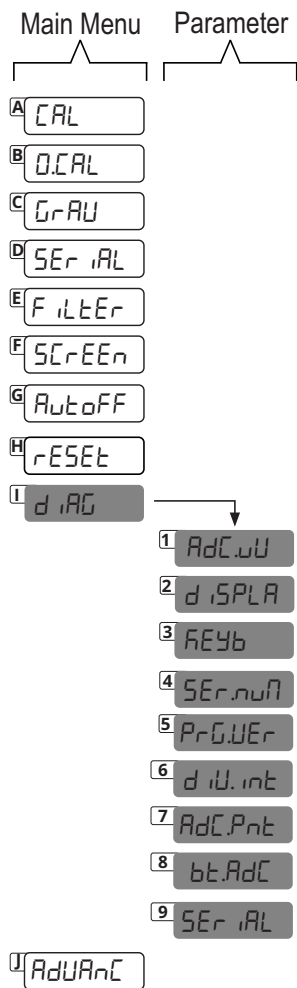
Press . store displays.

The system saves and returns to weigh mode.

## 2.8 Factory configuration reset (rESEt)



**NOTE:** Press C to cancel this function. See [Section 2.10.8 on page 30](#) for factory reset that removes calibration.



How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

Navigate to main menu.

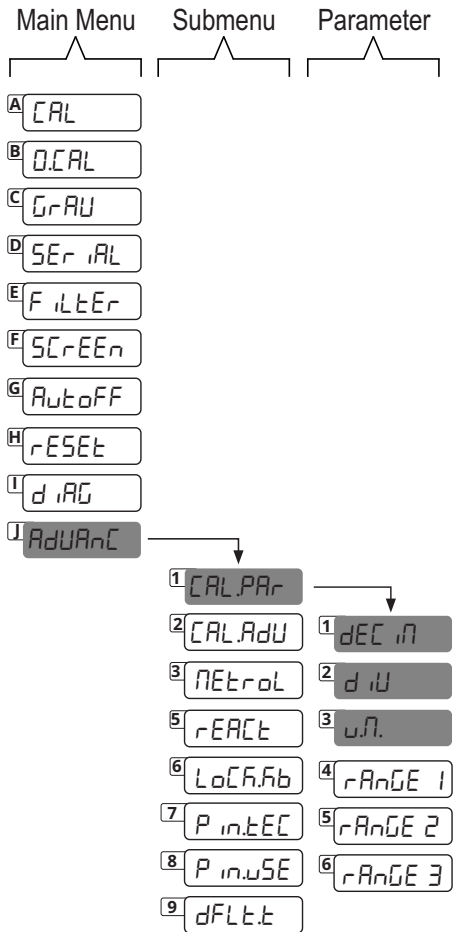
Press . Save? displays.

Press . store displays.

The system saves and returns to weigh mode.

## 2.9 Diagnostics (d ,AL)

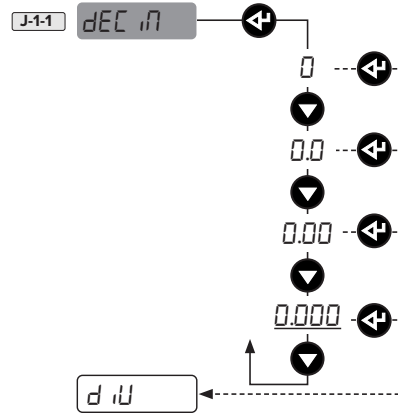
- I-1 AdC.uU ADC Microvolts - Checks microvolt reading of load cell. With full scale applied, this reading should be stable and never exceed 30000.
- I-2 d,iSPLA Display- Integrity check of all segments and icons.
- I-3 KEyb Keyboard - Press a key to verify its operation and view its code. Press a key three times to return to previous menu.
- I-4 SEr.nuN Serial number - Displays serial number of the scale.
- I-5 PrG.WEr Program version - Displays hardware revision followed by software version.
- I-6 d,iU.int Division internal - Number of internal division of calibration (quantity of ADC ponts/division).
- I-7 AdC.Pnt ADC points from the A/D converter.
- I-8 bt.AdC Battery ADC - DC value of the battery.
- I-9 SEr,iAL Serial - For manufacturer use only.



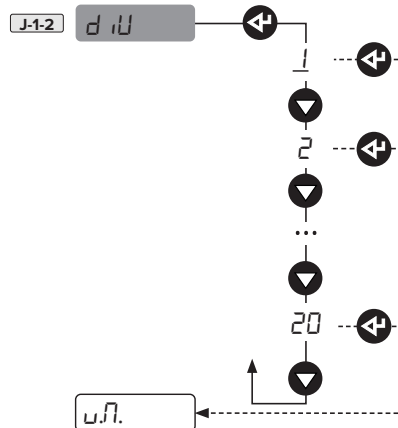
## 2.10 Advanced (AdVAnC)

### 2.10.1 Calibration Parameters (CAL .PAR)

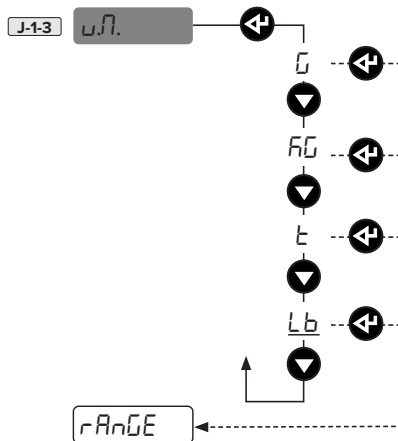
#### 2.10.1.1 Decimal Point (dEC .n)



#### 2.10.1.2 Division (dIU)



#### 2.10.1.3 Unit of Measure (u.n.)



How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

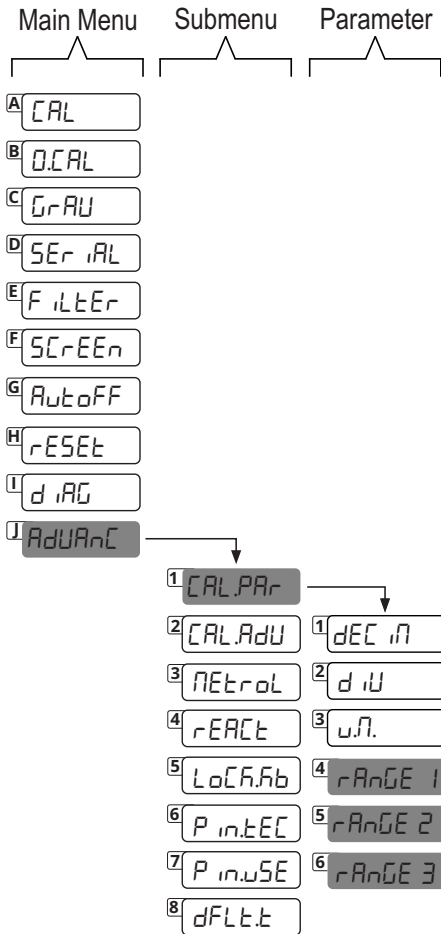
How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.





How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

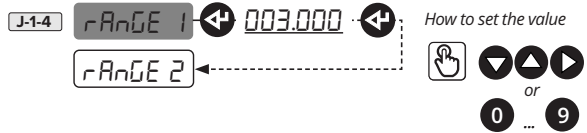
How to save changes:

- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.

2.10.1.4 Range - Scale capacity:

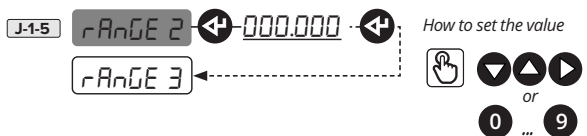
Range 1 (rAnGE . 1) - Set Max or Range 1

NOTE: Max range = 800.000



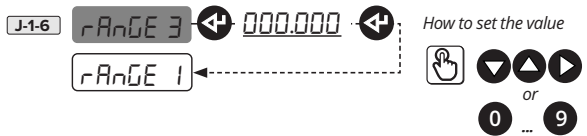
Range 2 (rAnGE . 2) - Set Max or Range 2

NOTE: For multi-range scales, set the second weighing range.



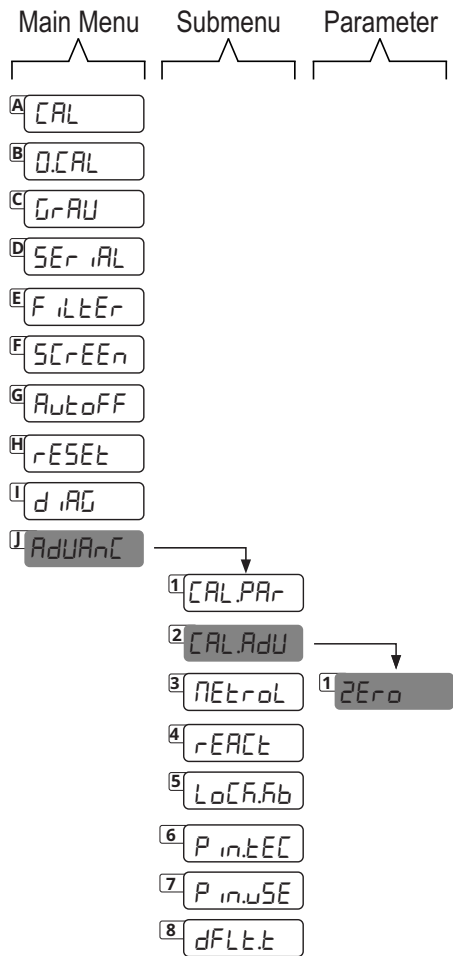
Range 3 (rAnGE . 3) - Set Max or Range 3

NOTE: For multi-range scales, set the third weighing range.



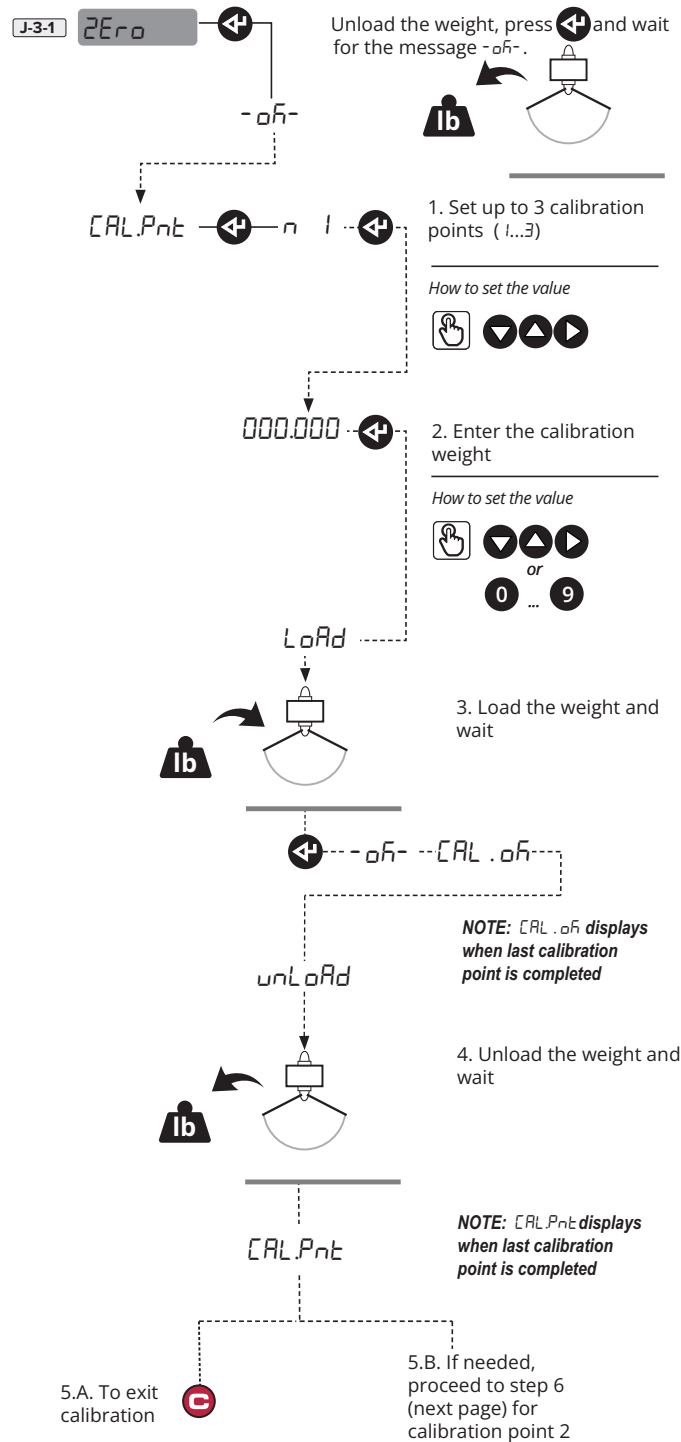
For example, a multi-range configuration with 1500/3000 lb, division 0.5/1 lb, would be set as:

- dEC . = 0.0
- dU = 5
- rAnGE 1 = 1500.0
- rAnGE 2 = 3000.0



## 2.10.2 Complete Calibration ([CAL.AdU])

**NOTE:** Before calibrating, configure the decimals (dDEC - page 24), division (dIU - page 24) and capacity (rRNGE - page 25).



### How to browse:

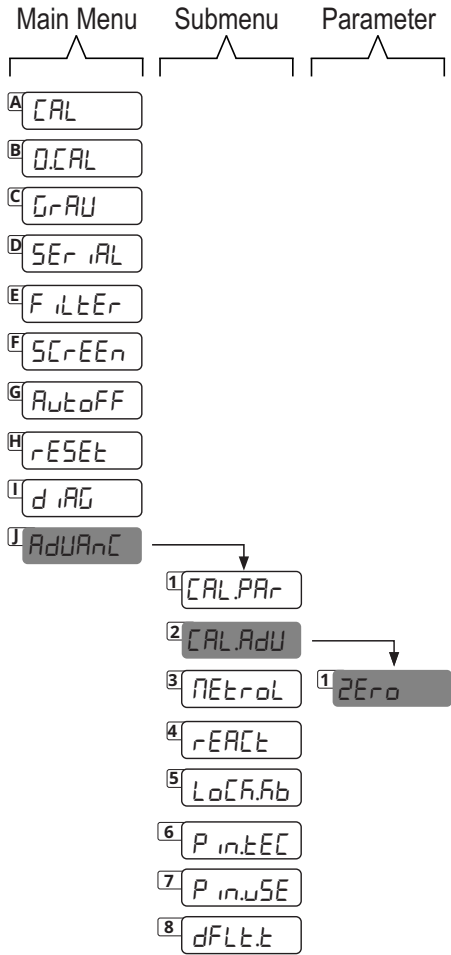
- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

### How to set a parameter:

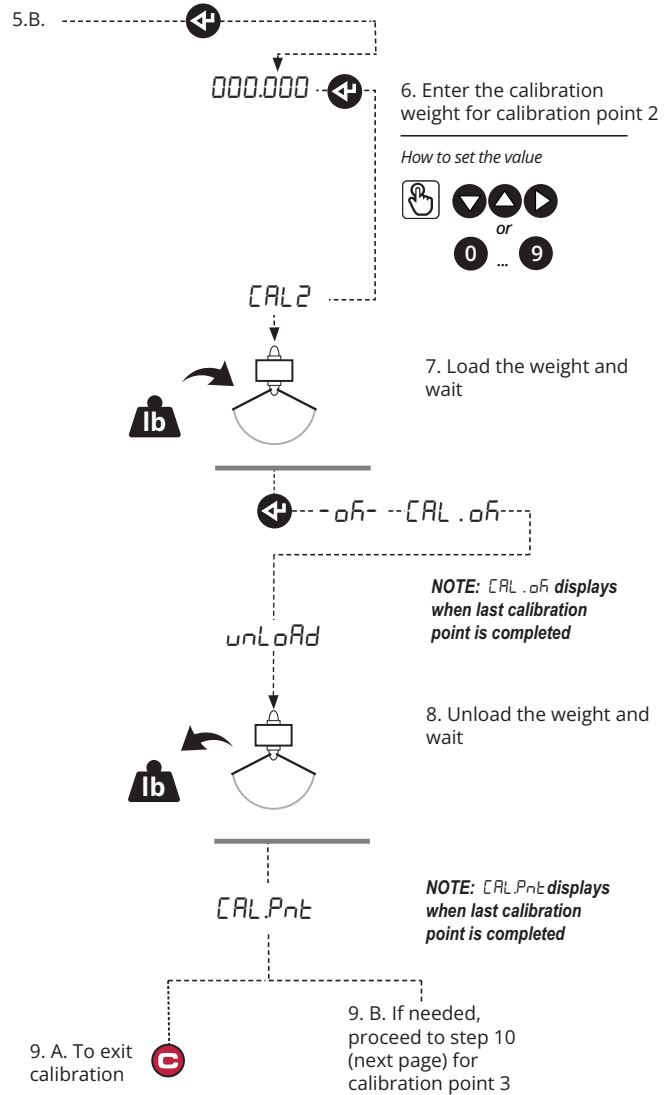
- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

### How to save changes:

- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.



### Complete Calibration (CAL.AdU) - Continued



How to browse:

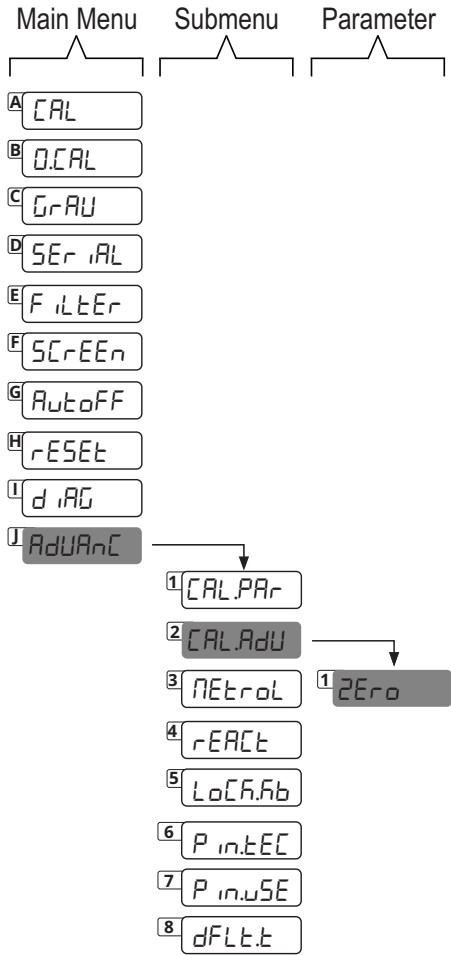
- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.



How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

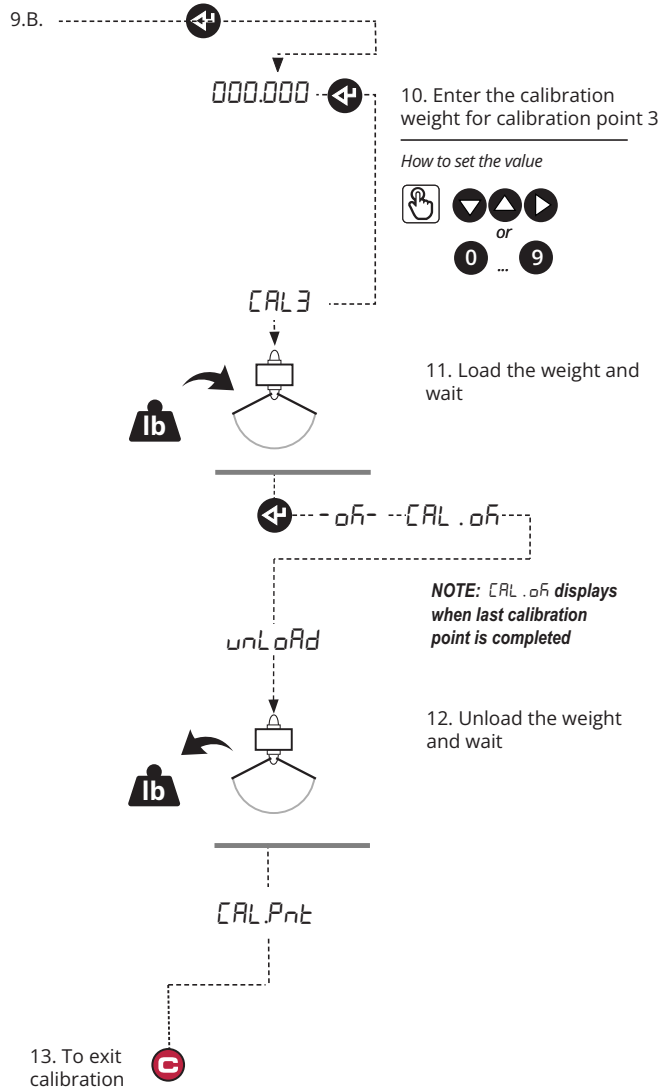
How to set a parameter:

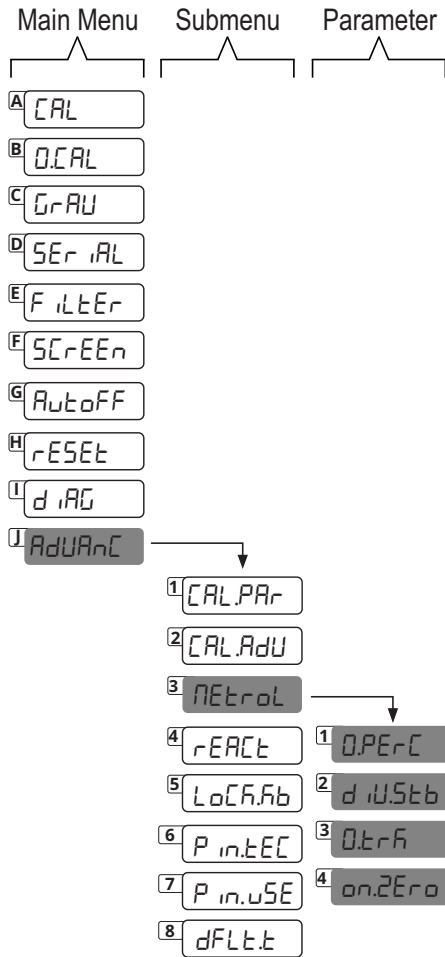
- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.

### Complete Calibration (CAL.AdU) - Continued





How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

How to set a parameter:

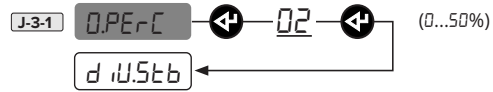
- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

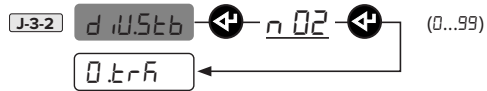
- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.

## 2.10.3 Metrological parameter (NEtroL)

### 2.10.3.1 Reset Percentage via Key (0.PErC)

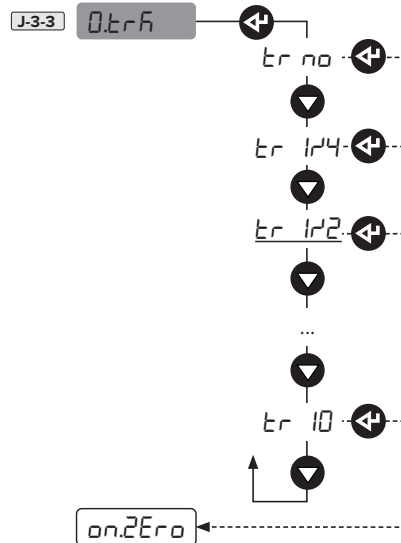


### 2.10.3.2 Sensitivity of Weight Stability Control (d.u.Stb)



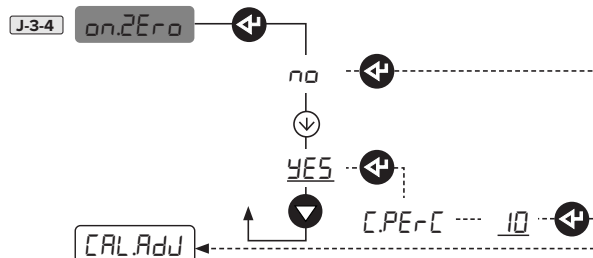
### 2.10.3.3 Zero Hold Function (Tracking) (0.trH)

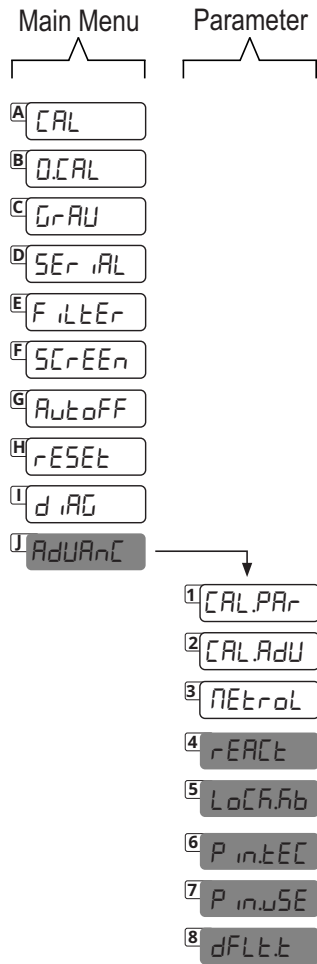
Zero tracking zeros a slow accumulation of weight based on division size.



### 2.10.3.4 Reset Power and Reset Percentage (on.ZErO)

When power is cycled the unit can zero the weight on the scale. If enabled, the amount of weight zeroed is based on a percentage of the capacity.





How to browse:

- Cycles through menus and parameters
- Advances to next menu
- Returns to previous menu

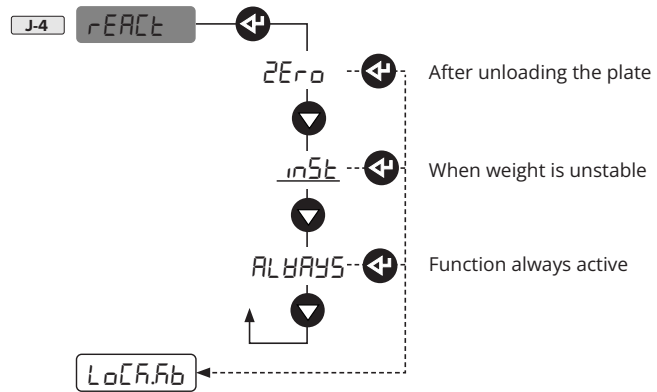
How to set a parameter:

- Increases/decreases values or cycles through parameters
- Confirms the parameter
- Returns to previous menu

How to save changes:

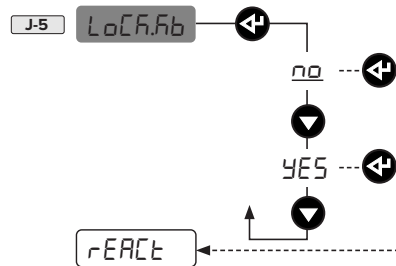
- Navigate to main menu.
- Press . Save? displays.
- Press . store displays.
- The system saves and returns to weigh mode.

### 2.10.4 Reactivating the Totalization or Print Function (rEACt)

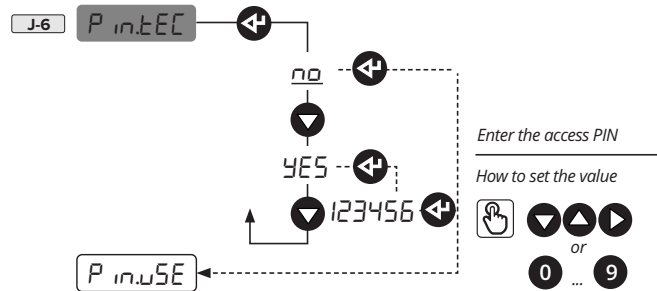


### 2.10.5 Permanent Keyboard Lock (LoCk.Fb)

**NOTE:** The keyboard lock excludes the C key.



### 2.10.6 PIN required to Access Programming Menu (P in.tEC)

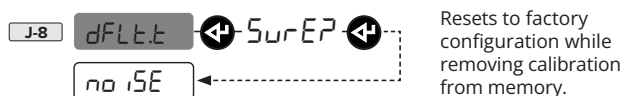


**IMPORTANT:** The RL101 control PIN is: 54868

### 2.10.7 PIN required to Access PIN to User Menus (P in.uSE)



### 2.10.8 Factory Reset (dFLt.t)



**NOTE:** Press C to cancel this function. See Section 2.8 on page 22 for factory reset that retains calibration.

## 3.0 Technical Drawings

### 3.1 Dimensional Drawings

#### 3.1.1 RL101-3k

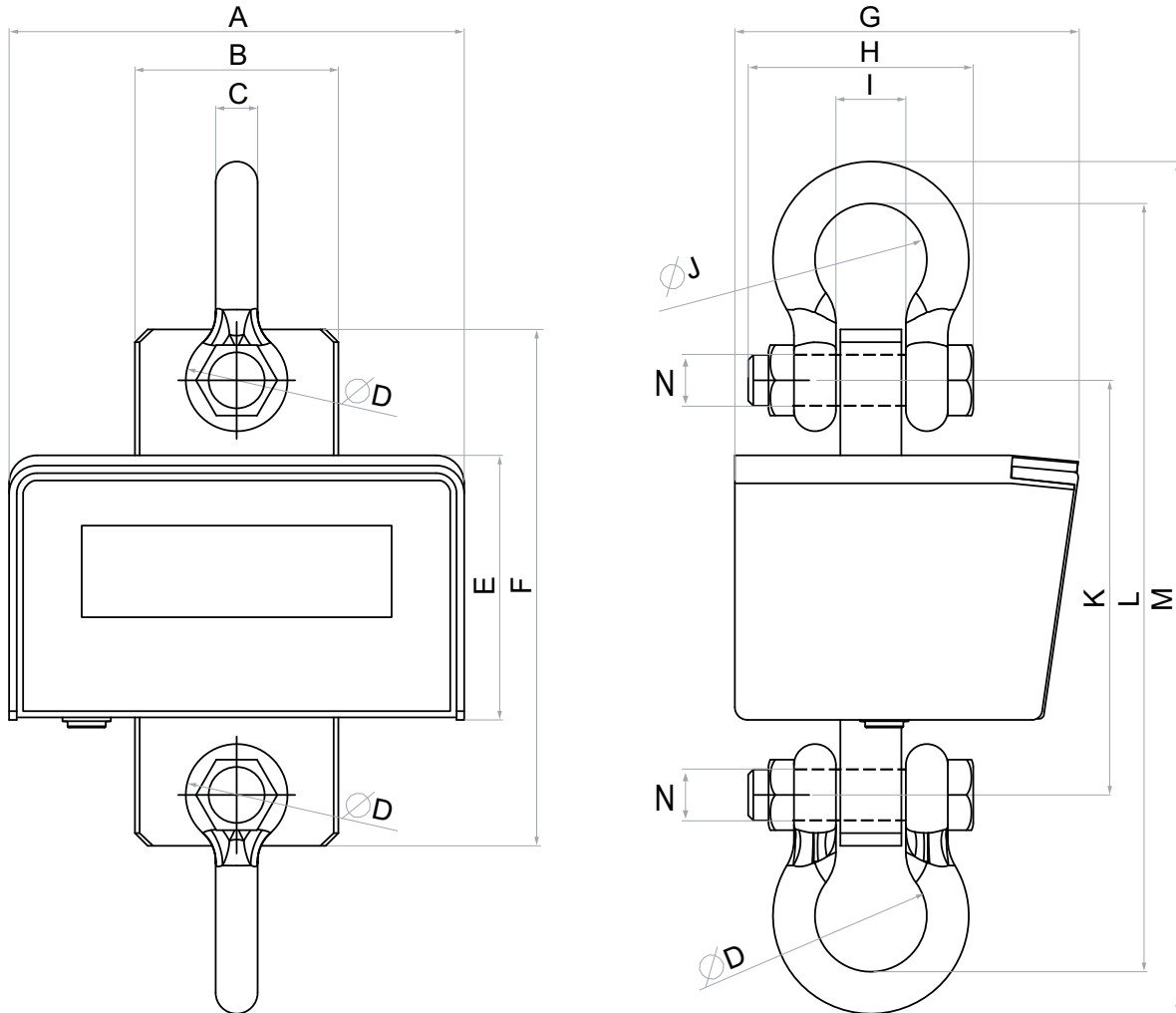


Figure 3-1. RL101-3K Dimensions

Item	Distance
A	7.09 in (180 mm)
B	3.15 in (80 mm)
C	0.63 in (16 mm)
D	1.58 in (40 mm)
E	4.10 in (104 mm)
F	9.67 in (246 mm)
G	5.35 in (136 mm)

Item	Distance
H	3.48 in (88.5 mm)
I	1.07 in (27 mm)
J	1.70 in (43 mm)
K	7.72 in (196 mm)
L	13.19 in (335 mm)
M	14.49 in (368 mm)
N	0.83 in (21 mm)

Table 3-1. RL101-3K Dimensions

3.1.2 RL101-6k and RL101-12k

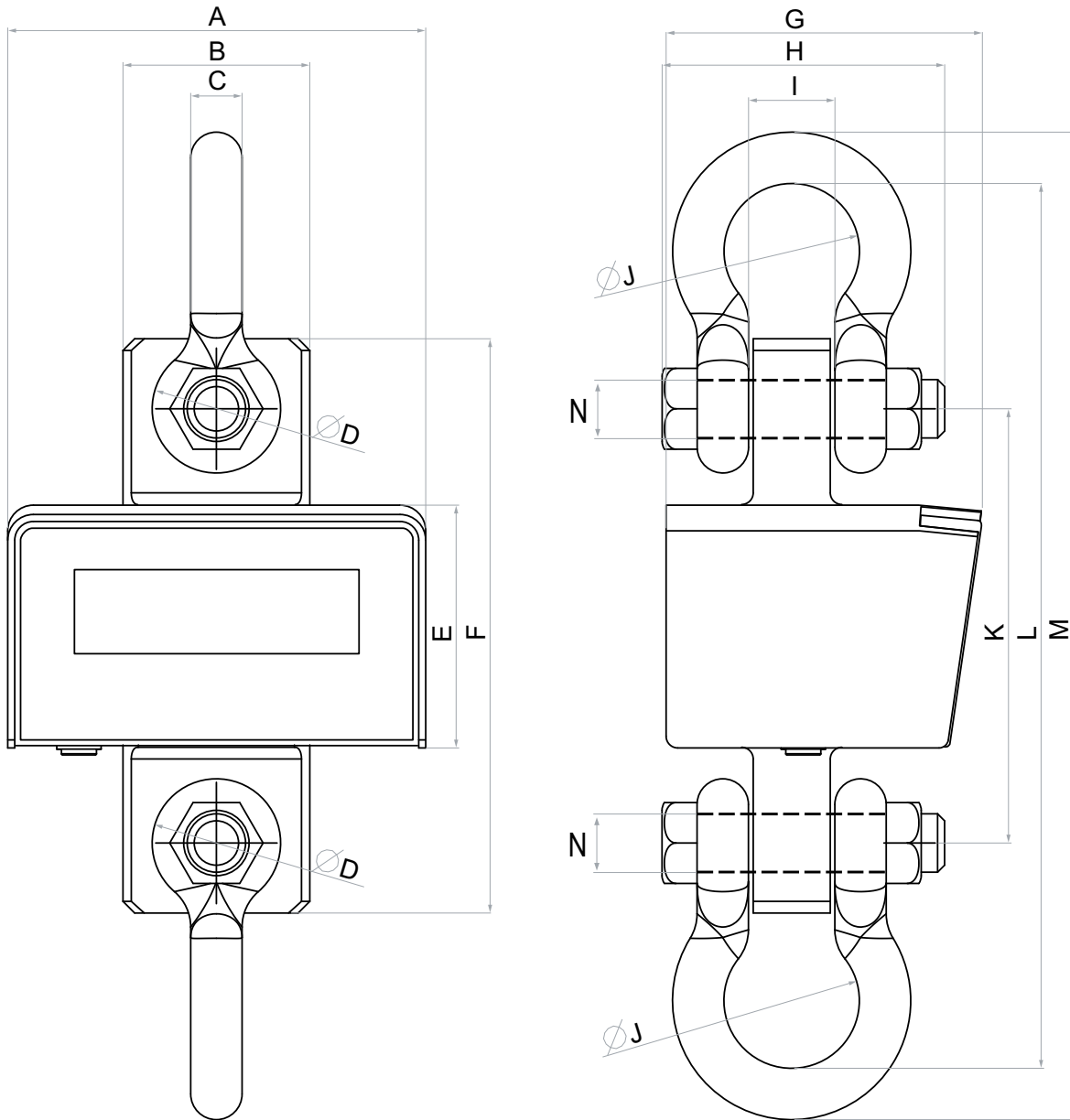


Figure 3-2. RL101-6k/RL101-12k Dimensions

Item	Distance
A	7.09 in (180 mm)
B	3.15 in (80 mm)
C	0.87 in (22 mm)
D	2.17 in (55 mm)
E	4.10 in (104 mm)
F	9.67 in (246 mm)
G	5.35 in (136 mm)

Item	Distance
H	4.76 in (121 mm)
I	1.46 in (37 mm)
J	2.28 in (58 mm)
K	7.32 in (186 mm)
L	14.92 in (379 mm)
M	16.65 in (423 mm)
N	1.10 in (28 mm)

Table 3-2. RL101-6k/RL101-12k Dimensions



### 3.2 PCB Drawings

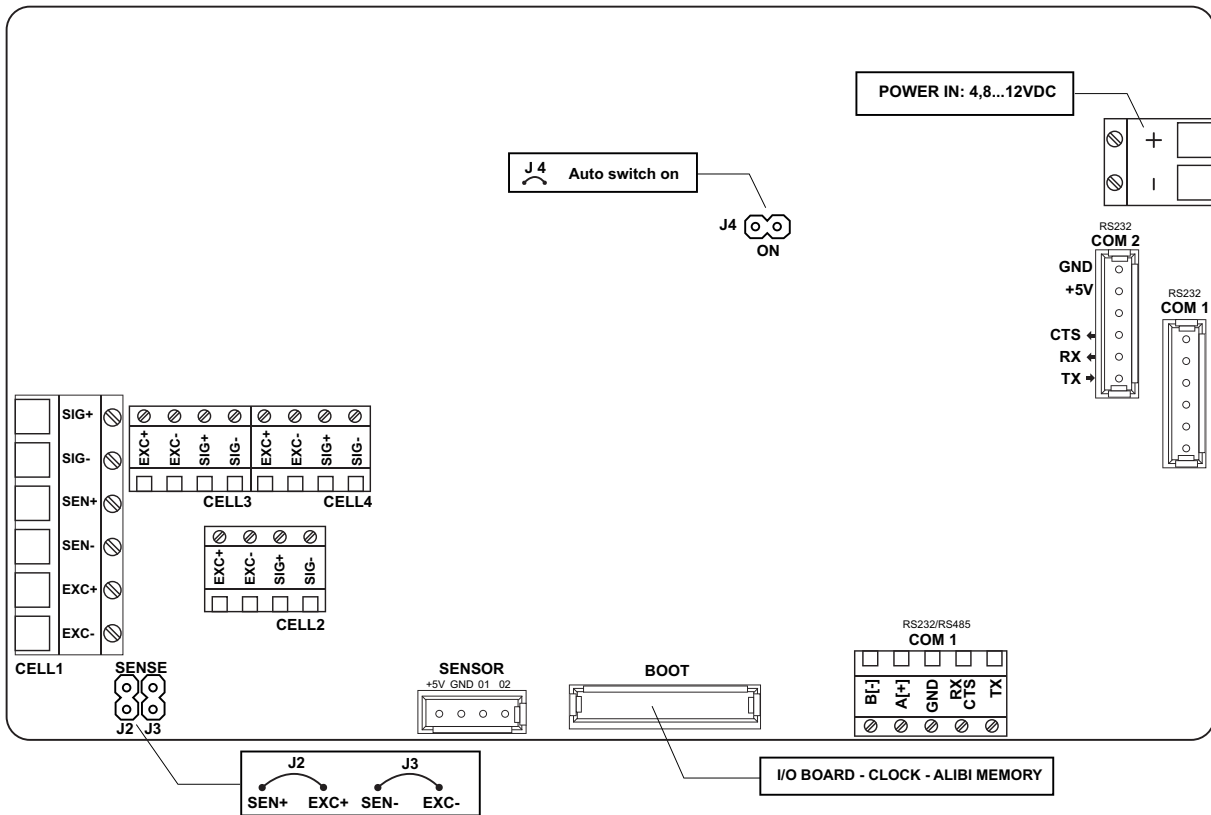


Figure 3-3. RL101 Indicator PCB Diagram

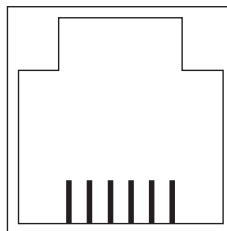


Figure 3-4. Serial Port

Pin	Function
2	Receive
4	Ground
5	Transmit

Table 3-3. Serial Port Pinout

## 4.0 Appendix

### 4.1 Error Messages

MESSAGE	DESCRIPTION	SOLUTION
PrEC.	Calibration error	First calibrate the zero point, then proceed with the next points.
Err.Pnt	Calibration error	Check the load cell connection. Check that the cell signal is stable, valid and greater than that of the previously acquired point.
Er 11	Calibration error	Increase the calibration weight.
Er 12	Calibration error	Check that the signal from the cell increases upon increasing the weight loaded on the scale. When acquiring calibration points, use increasing calibration weights.
Er 37	Calibration error	Repeat calibration, ensure the capacity and division have been correctly set.
Er 39	RL101 not configured	Reset to factory configuration (see <a href="#">Section 2.10.8 on page 30</a> ).
Er 85	RL101 configured but not calibrated	Perform calibration.
CEr.36	Calibration error	Check the signal from the load cell is not negative.
Err.NoE	Weight unstable	Check the <i>AdC.dU</i> parameter in the <i>d iRG</i> menu (see <a href="#">Section 2.9 on page 23</a> ), verify the signal is stable and retry.

Table 4-1. Error Messages

### 4.2 FAQ (Frequently Asked Questions)

Question	Answer
Can I change the maximum capacity without recalibrating?	Yes, change the <i>rRnGE 1.2.3</i> parameter ( <a href="#">Section 2.10.1.4 on page 25</a> ).
Can I change the division without recalibrating?	Yes, change the <i>d iU</i> parameter (see <a href="#">Section 2.10.1.2 on page 24</a> ).
Can I change the position of the decimal point without recalibrating?	Yes, change the <i>dEC iD</i> parameter (see <a href="#">Section 2.10.1.1 on page 24</a> ) and the value of the calibration points via <i>CEr.Pnt</i> (see <a href="#">Section 2.10.2 on page 26</a> ).
What should I do if the scale does not power on?	<ul style="list-style-type: none"> <li>• Check if the battery compartment is inserted correctly.</li> <li>• Replace the batteries and try again.</li> <li>• Check if the input voltage to the mother board is correct.</li> <li>• Try the forced power mode by inserting the "ON BOOT" jumper present on the mother board. If the RL101 lights up, check the correct operation of the keyboard, using the diagnostic menu (<a href="#">Section 2.9 on page 23</a>).</li> </ul>

Table 4-2. FAQ

## 4.3 Parameter Reference

Parameter	Description	Page
<code>CAL</code>	Quick calibration	<a href="#">Section 2.1 on page 12</a>
<code>0.CAL</code>	Reset pre-tare (zero calibration)	<a href="#">Section 2.2 on page 13</a>
<code>GRAV</code>	Location gravity	<a href="#">Section 2.3 on page 14</a>
<code>SEPCAL</code>	Print customization	<a href="#">Section 2.4 on page 15</a>
<code>COM.PC</code>	Communication with PC, PLC or repeater	<a href="#">Section 2.4.1 on page 15</a>
<code>MODE</code>	Select communication mode	<a href="#">Section 2.4.1.1 on page 15</a>
<code>COM.SEL</code>	Select COM port for connection with PC/PLC	<a href="#">Section 2.4.1.2 on page 16</a>
<code>BAUD</code>	Select communication speed (baud rate)	<a href="#">Section 2.4.1.3 on page 16</a>
<code>BIT</code>	Select serial protocol	<a href="#">Section 2.4.1.4 on page 16</a>
<code>ADVANC</code>	Advanced configuration	<a href="#">Section 2.4.2 on page 17</a>
<code>PROTOL</code>	Communication protocol	<a href="#">Section 2.4.2.1 on page 17</a>
<code>TTL.TIL</code>	TTL port / Inclinometer activation (for use by the manufacturer)	<a href="#">Section 2.4.2.3 on page 17</a>
<code>TERN</code>	Closing character of each print line	<a href="#">Section 2.4.2.4 on page 18</a>
<code>IGNORE</code>	Ignore unknown commands	<a href="#">Section 2.4.2.5 on page 18</a>
<code>FILTER</code>	Weighing filters	<a href="#">Section 2.5 on page 19</a>
<code>SCREEN</code>	Adjusting the display	<a href="#">Section 2.6 on page 20</a>
<code>BACKLIT</code>	Backlighting	<a href="#">Section 2.6.1 on page 20</a>
<code>BRIGHT</code>	Brightness	<a href="#">Section 2.6.2 on page 20</a>
<code>AUTOFF</code>	Auto off	<a href="#">Section 2.7 on page 21</a>
<code>RESET</code>	Factory configuration reset	<a href="#">Section 2.8 on page 22</a>
<code>DIAG</code>	Diagnostics	<a href="#">Section 2.9 on page 23</a>
<code>ADCUU</code>	Converter	<a href="#">Section 2.9 on page 23</a>
<code>DISPLA</code>	Display	<a href="#">Section 2.9 on page 23</a>
<code>KEYB</code>	Keyboard	<a href="#">Section 2.9 on page 23</a>
<code>ADVANC</code>	Advanced	<a href="#">Section 2.10 on page 24</a>
<code>CAL.PAR</code>	Calibration parameters	<a href="#">Section 2.10.1 on page 24</a>
<code>DEC.IN</code>	Configuration of the decimal point	<a href="#">Section 2.10.1.1 on page 24</a>
<code>DIV</code>	Reading division	<a href="#">Section 2.10.1.2 on page 24</a>
<code>UNIT</code>	Unit of measure	<a href="#">Section 2.10.1.3 on page 24</a>
<code>RANGE 1</code>	Scale capacity (maximum capacity / first weighing range)	<a href="#">Section 2.10.1.4 on page 25</a>
<code>RANGE 2</code>	For multi range scales (second weighing range)	<a href="#">Section 2.10.1.4 on page 25</a>
<code>RANGE 3</code>	For multi range scales (third weighing range)	<a href="#">Section 2.10.1.4 on page 25</a>

Table 4-3. Parameter Summary

Parameter	Description	Page
<code>CAL ADU</code>	Complete calibration	<a href="#">Section 2.10.2 on page 26</a>
<code>METROL</code>	Metrological parameters	<a href="#">Section 2.10.3 on page 29</a>
<code>OPERC</code>	Reset percentage via ↓ key	<a href="#">Section 2.10.3.1 on page 29</a>
<code>dUSTb</code>	Sensitivity of the weight stability control	<a href="#">Section 2.10.3.2 on page 29</a>
<code>ZERH</code>	Zero hold function (tracking)	<a href="#">Section 2.10.3.3 on page 29</a>
<code>onZERO</code>	Reset at power and reset percentage	<a href="#">Section 2.10.3.4 on page 29</a>
<code>rERCT</code>	Reactivation of the totalization or print function	<a href="#">Section 2.10.4 on page 30</a>
<code>LoCK.Fb</code>	Permanent keyboard lock (excluding <b>C</b> key)	<a href="#">Section 2.10.5 on page 30</a>
<code>P in.tEC</code>	Access PIN to programming menu	<a href="#">Section 2.10.6 on page 30</a>
<code>P in.uSE</code>	Access PIN to user menus	<a href="#">Section 2.10.7 on page 30</a>
<code>dFLEt</code>	Reset of the memory and of calibration	<a href="#">Section 2.10.8 on page 30</a>

Table 4-3. Parameter Summary (Continued)

## 5.0 Replacement parts

### 5.1 Main Assembly

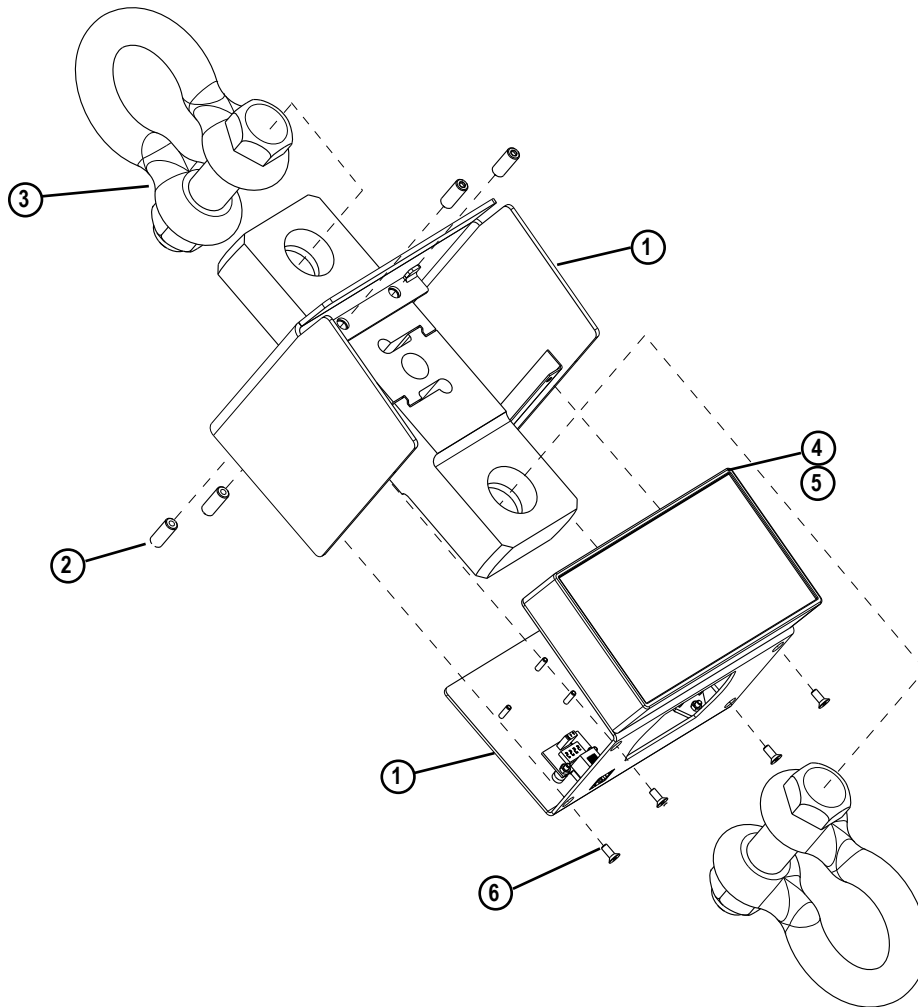


Figure 5-1. RL101 Main Assembly

Item No.	Part No.	Description	QTY
1	220190 (3000 lb capacity) 220192 (6000 and 12000 lb capacities)	Lower and upper enclosures (comes in a set with one upper and lower enclosure)	1
2	220181	Threaded rod m8 X 20 mm (part of fastener set, see <a href="#">Table 5-3 on page 39</a> )	4
3	220196 (3000 lb capacity) 220201 (6000 and 12000 lb capacities)	Shackle	2
4	220186	CPU board with display, keyboard, and IR sensor	1
5	220185	Screen cover	1
6	220181	Countersunk hex screw m4 x10 mm (part of fastener set, see <a href="#">Table 5-3 on page 39</a> )	4

Table 5-1. Main Assembly Parts

## 5.2 Enclosure Subassembly

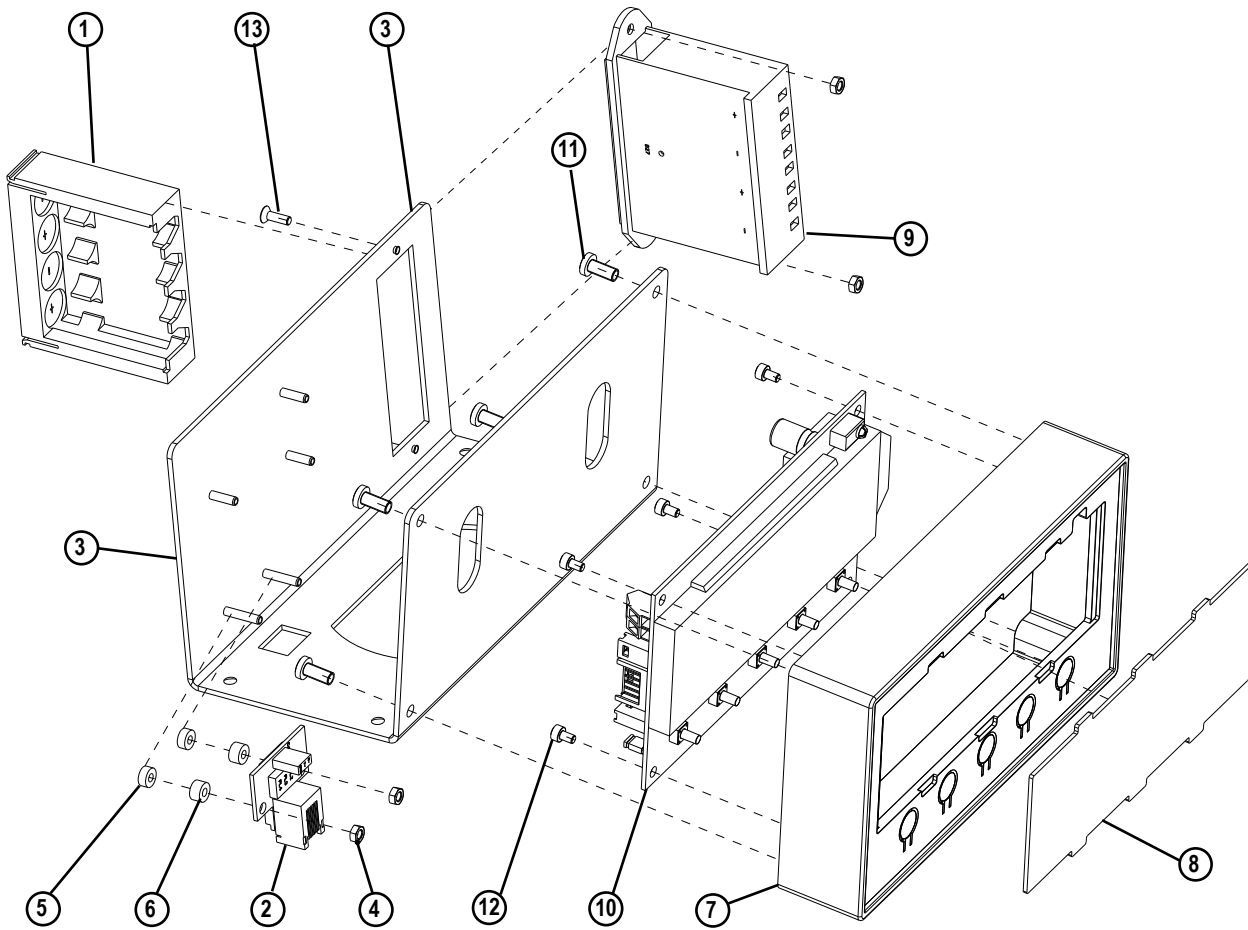


Figure 5-2.

Item No.	Part No.	Description	QTY
1	220188	Battery tray (comes in a set with one battery tray and compartment)	1
2	220199	Serial 232 jack (with cable)	1
3	220190 (3000 lb capacity) 220192 (6000 and 12000 lb capacities)	Lower and upper enclosures (comes in a set with one upper and lower enclosure)	1
4	220181	Hex nut m3 x 0.5 mm (part of fastener set, see <a href="#">Table 5-3 on page 39</a> )	2
5	220181	Spacer m3 x 3 mm (part of fastener set, see <a href="#">Table 5-3 on page 39</a> )	2
6	220181	Spacer m4 x 4 mm (part of fastener set, see <a href="#">Table 5-3 on page 39</a> )	2
7	220183	Front enclosure	1
8	220185	Screen cover	1
9	220188	Battery compartment (comes in a set with one battery tray and compartment)	1
10	220186	CPU board with display, keyboard, and IR sensor	1
11	220181	Hex bolt m4 x 10 mm (part of fastener set, see <a href="#">Table 5-3 on page 39</a> )	4
12	220181	Hex bolt m3 x 5 mm (part of fastener set, see <a href="#">Table 5-3 on page 39</a> )	4
13	220181	Countersunk hex screw m3 x 10 mm (part of fastener set, see <a href="#">Table 5-3 on page 39</a> )	2

Table 5-2. RL101 Enclosure Subassembly Parts

## 5.3 Spare Parts

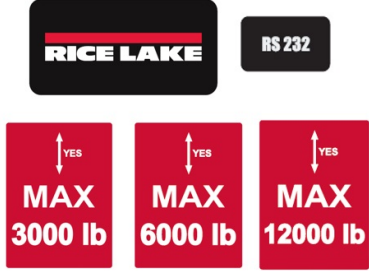



Image	Description	3000 lb capacity (PN 219144)	6000 lb capacity (PN 219145)	12000 lb capacity (PN 219147)
 <p>The image shows a label set for the scale. It includes a black label with the 'RICE LAKE' logo and 'RS 232' text. Below it are three red labels, each with 'MAX' and a capacity: '3000 lb', '6000 lb', and '12000 lb'. Each red label has a white double-headed arrow and the word 'YES' above it.</p>	<p>Label set</p>	220174	220174	220174
 <p>The image shows a collection of fasteners: four threaded rods (m8 x 20 mm), four hex bolts (m4 x 10 mm), four hex bolts (m3 x 5 mm), four countersunk hex screws (m4 x 10 mm), four countersunk hex screws (m3 x 10 mm), two spacers (m3 x 3 mm and m4 x 4 mm), and two hex nuts (m3 x 0.5 mm).</p>	<p>Fastener set</p> <p>Includes:          Threaded rod m8 x 20 mm (qty 4)          Hex bolt m4 x 10 mm (qty 4)          Hex bolt m3 x 5 mm (qty 4)          Countersunk hex screw m4 x10 mm (qty 4)          Countersunk hex screw m3 x 10 mm (qty 2)          Spacer m3 x 3 mm (qty 2)          Spacer m4 x 4 mm (qty 2)          Hex nut m3 x 0.5 mm (qty 2)</p>	220181	220181	220181
 <p>The image shows the RL101 scale's control panel with an overlay. The overlay is a white rectangular area. Below the overlay are buttons for ZERO, TARE, MODE, and PRINT, along with a red power button.</p>	<p>Overlay</p>	220184	220184	220184
 <p>The image shows a black battery tray and compartment with a handle and a latch.</p>	<p>Battery tray and compartment</p>	220188	220188	220188

Table 5-3. Spare Parts


Image	Description	3000 lb capacity (PN 219144)	6000 lb capacity (PN 219145)	12000 lb capacity (PN 219147)
	Travel case	220189	220189	220189
	Remote control	220194	220194	220194

Table 5-3. Spare Parts (Continued)







© Rice Lake Weighing Systems Content subject to change without notice.

230 W. Coleman St. • Rice Lake, WI 54868 • USA USA: 800-472-6703 • International: +1-715-234-9171