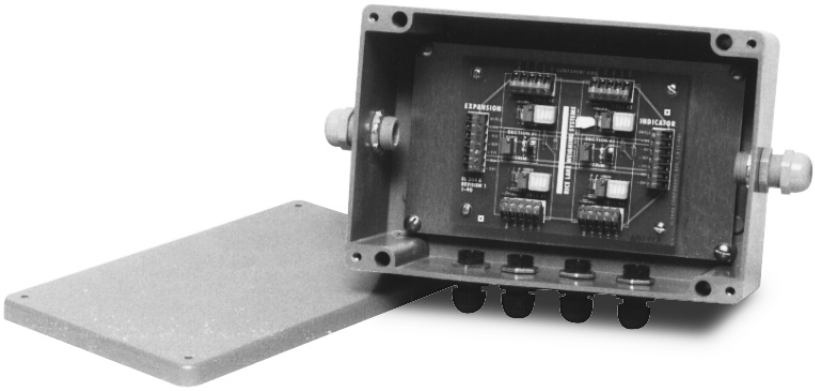
EL304A

Four-Channel Signal Trim Junction Box

Installation Manual



RICE LAKE
WEIGHING SYSTEMS

PN 16937 Rev A

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1.0 Introduction

The *EL304A Junction Box* can accommodate up to four load cells. Wiring additional junction boxes to the expansion terminal on the *EL304A* allows for more load cells to be connected. Load cell output can be trimmed with potentiometers either individually or paired in sections.

When correctly installed, the NEMA Type 4X fiberglass-reinforced polyester enclosure will withstand 40 psi water pressure. It is not, however, designed for high-pressure wash-down applications, exposure to steam or exposure to high-temperature liquids.

Manuals can viewed or downloaded on the Rice Lake Weighing Systems distributor site at www.ricelake.com

Warranty information can be found on the website at www.ricelake.com/warranties

1.1 Safety

Safety Symbol Definitions

WARNING *Indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death, and 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 instructions and warnings are understood. Contact any Rice Lake Weighing Systems dealer for replacement safety labels and manuals. Proper care is the user's responsibility.

WARNING

Failure to heed may result in serious injury or death.

Some procedures described in this manual require work inside the junction box or indicator enclosure. These procedures are to be performed by qualified service personnel only.

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

Do not operate without enclosure completely assembled.

Do not place fingers into slots or possible pinch points.

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

Do not make alterations or modifications to the unit.

Do not remove or obscure warning labels.

Do not submerge.

Before opening the unit, ensure all power is disconnected.

2.0 Installation

Mount the enclosure in a location convenient for servicing and away from standing water. The enclosure should be in a location that will not require extending the load cell cables.

Depending on the mounting surface, the enclosure is attached using four pan-head screws (provided), bolts or other suitable masonry fasteners. Figure 2-1 illustrates the dimensions for mounting the enclosure.

Important ***Locate the junction box so the load cell cable length need not be changed. Load cell output is temperature-compensated for the supplied cable length. Altering that length will alter the cell's signal output.***

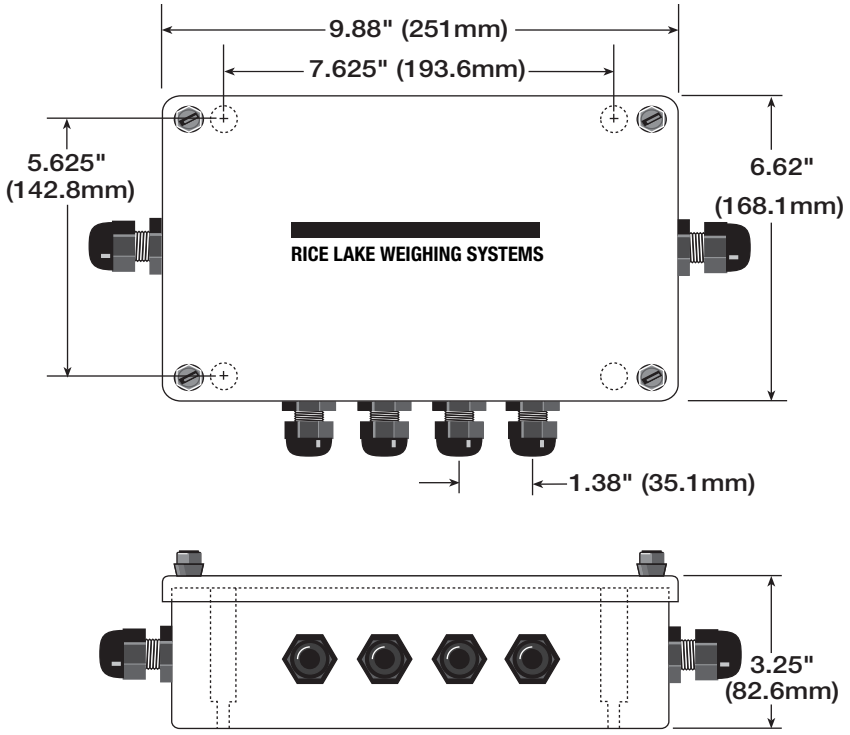
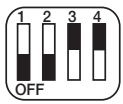


Figure 2-1. EL304A Enclosure Dimensions

3.0 Wiring

The terminal strips are labeled ***Cell 1*** through ***Cell 4*** and are used to connect up to four individual load cells. Determine the number of load cells to be connected to the junction box. It is possible to use this box with other combinations, on a track scale or other system where load cells may be connected together in section pairs. Even numbers of cells (four or eight) may be used. This is done by paralleling the excitation and signal leads of a load cell pair and connecting them to the same input on the junction box. It is recommended when using more than four load cells, to daisy-chain the junction boxes together using the expansion connectors.

1. After determining the wiring pattern, route the load cell cables through the nylon cord grip assemblies. Leave the grips loose until final closure.
2. Before connecting load cell cables to the terminals, check that all wire ends have been properly stripped and tinned.
3. Connect the load cell and indicator cables to the appropriate connectors. DIP switches 3 and 4 must be ***ON*** for any cells that will be trimmed.
4. If using less than four load cells, remove any unused channels from the circuit by turning DIP switches 3 and 4 to ***OFF*** on those channels.



Important ***See back cover of Rice Lake Weighing Systems Load Cell Product Selection Guide for wiring color codes.***

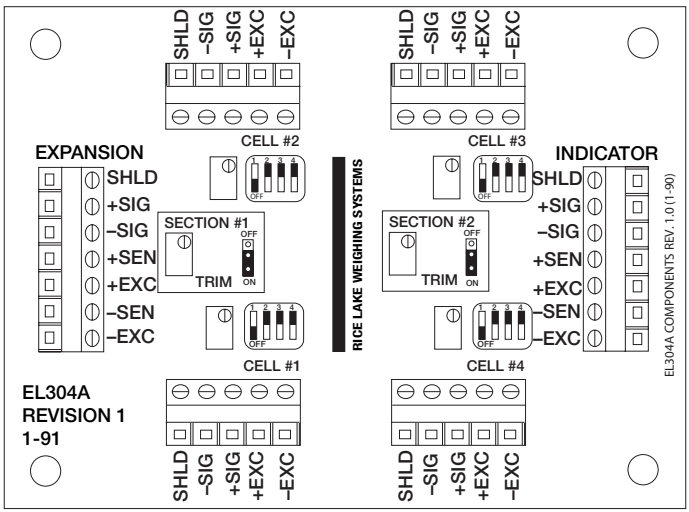


Figure 3-1. EL304A Enclosure Dimensions

The indicator terminal strip is used to connect the main cable to the indicator. Determine the indicator's load cell input connections from the indicator manual. Run a cable from the indicator to the junction box through the larger cord grip and make the connections on the indicator terminal.

3.1 Cable Drip Loops

If cables will be exposed to water or other liquids, bend a short downward loop near the cord grip of each cable so any fluid draining down the cables will drip off before reaching the junction box.

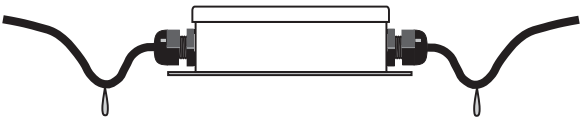


Figure 3-2. Drip Loops

3.2 Sense Leads

Use sense leads to correct small errors which can cause inaccurate readings and drifting problems, especially if the indicator is located far from the junction box.

4.0 Trimming

The *EL304A* is a signal trimming device. Each load cell can be set for coarse, medium or fine trim with its own 4-pole dip switch. Switches 1 and 2 work in various combinations to alter the sensitivity of the trimming potentiometers. See Table 4-1. Switches 3 and 4 must be ***ON*** for each active load cell to enable trimming.

Note

On older models of the EL304A junction box, the section trim potentiometers work in the opposite direction as the individual load cell trim potentiometers.

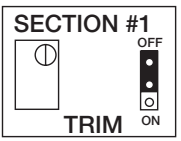
To decrease resistance for maximum signal on these units, turn individual potentiometers counterclockwise and section potentiometers clockwise.

Switch 1	Switch 2	Adjustment Range	350Ω Cells	700Ω Cells
OFF	OFF	None	None	None
OFF	ON	Fine	0.35%–6.8%	0.7%–12.8%
ON	OFF	Medium	0.35%–12.5%	0.7%–22.3%
ON	ON	Coarse	0.35%–17.6%	0.7%–29.9%

Table 4-1. Approximate Trim Ranges - Summing Board

To enable trimming using the fine adjustment range, set DIP switches 2, 3 and 4 on active channels to ***ON***, and switch 1 to ***OFF***.

1. Turn the four individual cell potentiometers fully counterclockwise to give maximum signal output from each cell.
   - To trim cells individually, ensure the Section Trim jumpers are in the ***OFF*** position.
   - To trim cells in pairs, set the Section Trim jumpers to the ***ON*** position.
   - If section trimming is chosen, turn the two section potentiometers fully counterclockwise so both sections are at maximum signal output.



2. Remove all weight from the scale and zero the indicator.
3. Place calibrated test weights over each load cell or section in turn. The amount of test weights used will depend on the scale configuration. For a four-cell platform, using 25% of scale capacity is recommended.

Note

When loading the corners with test weights, do not exceed the concentrated load capacity specified by the scale manufacturer.

For specific recommendations, refer to Handbook 44, published by the National Institute of Standards and Technology (NIST).

4. Record the value displayed on the indicator after the test weight is placed on each corner, in turn, directly over the load cell or over each section.
5. Allow the scale to return to zero each time to check for friction or other mechanical problems. Select the load cell or section that has the lowest value as the reference point. This cell or section will not be trimmed.

6. Place the same test load over each of the other load cells or sections.
7. Using the corresponding potentiometer, trim each load cell or section down to equal the load cell selected as the reference point. As corner corrections are somewhat interactive, check all cells or sections again for repeatability. If necessary, repeat steps 4-7 until each load cell or section is equal to the load cell selected as the reference point.
8. Tighten the cord grip assemblies with a wrench. To be watertight, each cord grip must be tightened so the rubber sleeve begins to protrude from the hub.
9. Unused hubs must be plugged to prevent moisture entry.
10. Insert the enclosed desiccant bag and replace the cover, tightening the cover screws in an alternating pattern to be certain the gasket is compressed equally in all locations.

To prevent water and other contaminants from entering the junction box, fill any unused cable grips with post screw plugs (part number 19538). One plug is provided. See the Electronic Replacement Parts and Components catalog to order extra hole plugs.

If the enclosure is located in a damp or wet area, change the desiccant (part number 16038) every four to six months.

4.1 Sealing the EL-304A

EL304A hardware kit comes with two sealing screws (PN 177769) which are used to replace the two cover screws when the junction box needs to be sealed for Legal for Trade units.

Use these screws with a sealing wire (not included) to prevent tampering with the trim board settings after calibration of the scale.

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