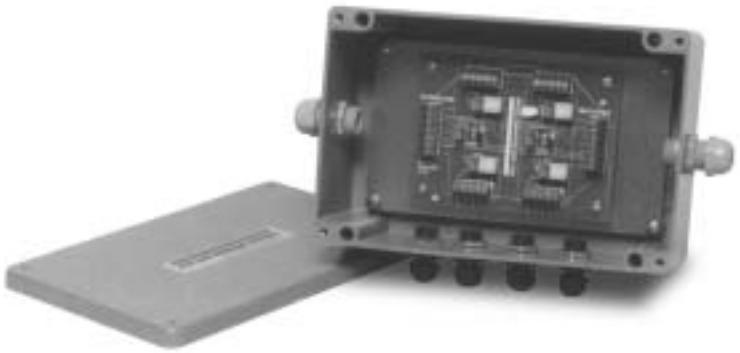
EL-304A

Four-Channel Signal Trim Junction Box

Installation Manual



RICE LAKE WEIGHING SYSTEMS

Commitment Beyond Measurement®

ISO 9001 REGISTERED

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Introduction

The EL-304A Junction Box can accommodate up to four load cells. Additional load cells may be connected to the EL-304A Junction Box by wiring additional junction boxes to the EXPANSION terminal on the EL-304A. Load cell output can be trimmed with potentiometers either individually or paired in sections.

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

CHANGING CABLE LENGTH
Locate the junction box so 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.

Mounting the Junction Box Enclosure

Mount the enclosure in a location convenient for servicing and away from standing water. Try to mount the enclosure in a location that will not require extending the load cell cables.

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

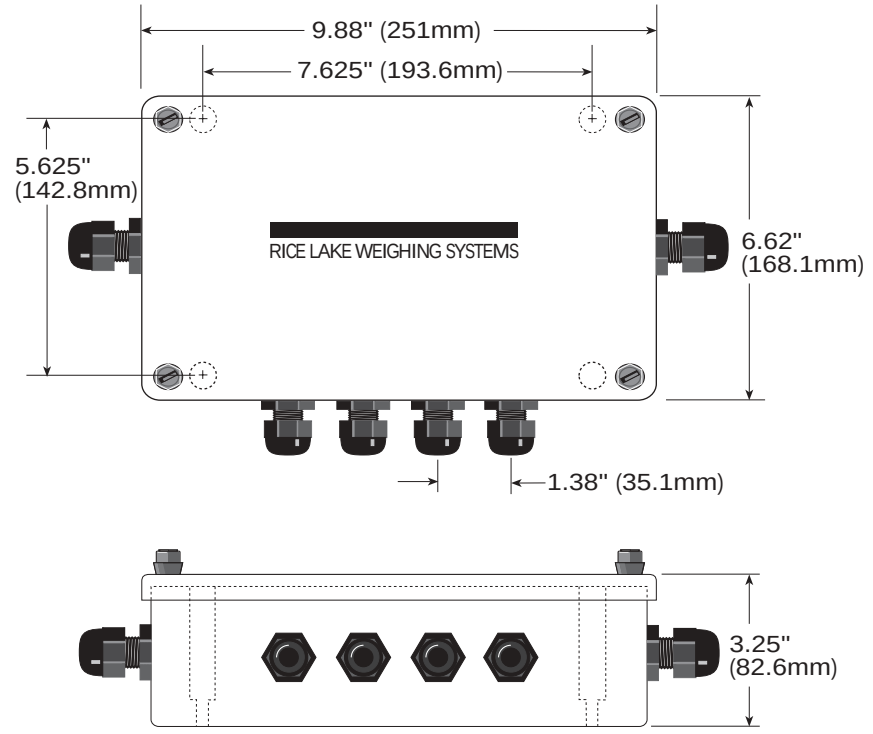

FIGURE 1: EL-304A ENCLOSURE DIMENSIONS

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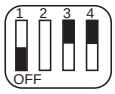
Wiring

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

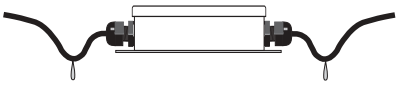
The terminal strips are labeled “Cell 1” through “Cell 4” and are used to connect the individual load cells. Determine the number of load cells to be connected to the junction box. The EL-304A has been designed to connect and trim four load cells. However, it is possible to use this box with other combinations. 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 with the EL-304A. This is done by paralleling the excitation and signal leads of a load cell pair, and connecting them to the same input on the J-Box. However, it is recommended practice when using more than four load cells to “daisy-chain” EL-304A J-Boxes together using the expansion connectors.

After determining the wiring pattern, route the load cell cables through the nylon cord grip assemblies. Leave the grips loose until final closure. Before connecting load cell cables to the terminals, check that all wire ends have been properly stripped and tinned. Connect the load cell and indicator cables to the appropriate connectors. DIP switches 3 and 4 must be ON for any cells which you will be trimming. 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.



DIP switches 3 & 4 must be ON to enable trimming.

CABLE DRIP LOOPS
If cables will be exposed to water or other liquids, bend a short downward loop in all cables near the cord grips so any fluids draining down the cables will drip off before reaching the junction box.



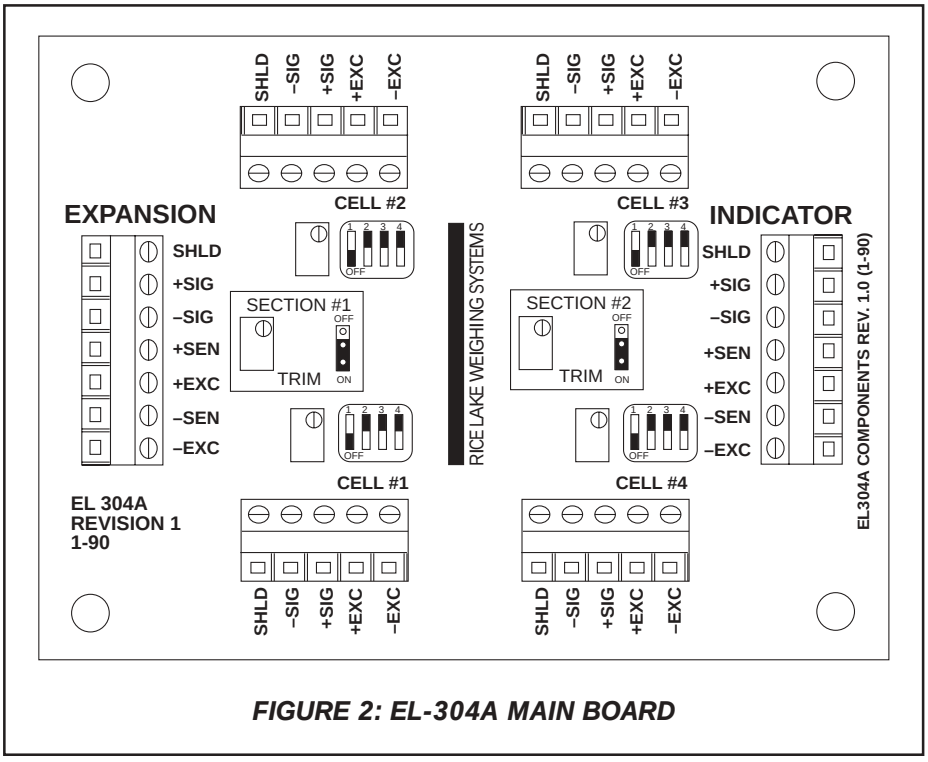


FIGURE 2: EL-304A MAIN BOARD

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.

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

Trimming Procedure

The EL-304A J-Box is a signal trimming device. Each 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 as shown in the table below. Switches 3 and 4 must be ON for each active cell to enable trimming.

Approximate Trim Ranges - EL-304A Summing Board

Switch 1	Switch 2	Adjustment Range	350Ω Cells	700Ω Cells
OFF	OFF	None	None	None
OFF	ON	Fine	.35%–6.8%	.7%–12.8%
ON	OFF	Medium	.35%–12.5%	.7%–22.3%
ON	ON	Coarse	.35%–17.6%	.7%–29.9%

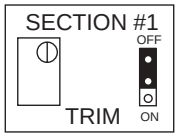
Whenever a large amount of trim seems necessary to equalize output (more than 7% of normal output), check for other possible problems. Always strive for the least amount of trim.

For example, 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.

NOTE: *On older models of the EL-304A Junction Box, the Section Trim pots work in the opposite direction as the Individual Cell Trim pots. To decrease resistance for maximum signal on these units, turn Individual pots counterclockwise and Section pots clockwise.*

1. Turn the four individual cell potentiometers fully counterclockwise to give maximum signal output from each cell.

   To trim cells individually, be sure the Section Trim jumpers are in the OFF position as shown at right.



2. 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.

3. Remove all weight from the scale and zero the indicator. Place calibrated test weights over each load cell or section in turn. The amount of test weights to be used will depend on the scale configuration; for specific recommendations, refer to *Handbook 44*, published by the National Institute of Standards and Technology (NIST). For a four-cell platform, we recommend using 25% of scale capacity.

4. Record the value displayed on the indicator after the test weight is placed in turn on each corner, directly over the load cell, or over each section. 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 your reference point. This cell or section will not be trimmed.

5. Place the same test load over each cell or section in turn. Using the corresponding potentiometer, trim each cell or section down to equal the reference point. As corner corrections are somewhat interactive, check all cells or sections again for repeatability. If necessary, repeat steps 4 and 5.

6. 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.

7. Unused hubs must be plugged to prevent moisture entry. See the *Electronic Replacement Parts and Components* catalog to order extra hole plugs.

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

⚠ Caution

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

⚠ Caution

To prevent water and other contaminants from entering the J-Box, fill any unused cable grips with post screw plugs (part number 19538). One plug is provided.