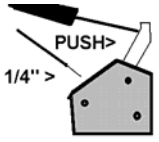
Load Cell Central
1-800-LOADCEL

Model: S4J1 Smart Junction Box Instructions

This device offers a simple and effective means of terminating, balancing and trimming up to four load cells per box to an indication device. Multiple S4J1-EP's may be daisy-chained for larger applications. Protection to NEMA 4x is provided by the stainless steel enclosure.

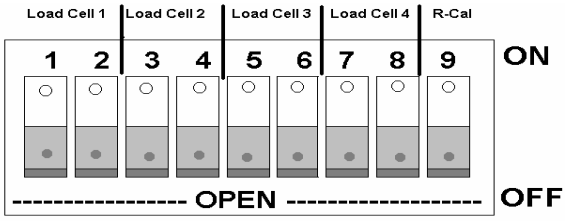
INSTALLATION: Locate a suitable mounting location and mount the enclosure using the integral mounting tabs. The four mounting holes are ¼" in diameter.

Remove the four screws in the enclosure cover and remove the cover. The provided cable grips will accept cable ODs of 8-10mm (0.31" – 0.39"). Insure that cable grips and nuts are tight in the enclosure. Route load cell and indication device cables through the associated cable grips extending into the enclosure far enough to facilitate dressing and termination of the cable end. Remove cable outer jacket exposing 3-4" of the inner conductors and drain wire. If cable has a braided shield carefully trim it off (do not damage inner conductors' insulation). If the cable does not provide a drain wire then a length (3-4") of wire (22-26 AWG) must be soldered to the braid. Complete the dressing of the cable by placing a small length (½ to ¾ ") of insulation sheath over the transition of the outer jacket / braid. Shrink tubing of the appropriate diameter is suggested however electrical tape may be used. This is not necessary if the cable shield is of the metalized foil type. Strip the individual conductors approx. ¼" and twist the wire strands. Noting the load cell manufacturer's wiring color code insert the appropriate wire into the corresponding terminal for that load cell's terminal block. Note the terminal identification is marked on the circuit card. Using a small flat blade (pocket) screwdriver to depress the lever on the terminal opens the terminals. (See diagram below)

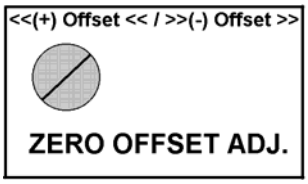


Not pulling jacketed cable out of the grip, withdraw excess cable from the enclosure and tighten the cable grip's compression nut until the cable is securely sealed. For any unused cable grips insert a 3/8 "dia. X ½ " bolt and tighten compression nut to seal the grip. After completing adjustments reinstall the enclosure cover using the supplied NYLOK® self-sealing screws. To prevent gasket damage **DO NOT OVER-TIGHTEN FASTENERS.**

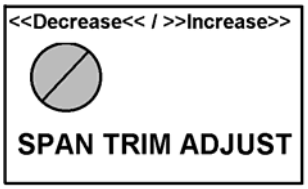
ADJUSTMENTS: There are two adjustment parameters available in the Smart Junction Box (S4J1), ZERO offset and signal trim (SPAN). To utilize these adjustments requires isolation of the individual load cells. This is accomplished with the DIP switch; there are two switches for each load cell- both must be used when switching load cells ON or OFF. (See diagram below)



After mechanical adjustment of the scale has been achieved switch off all load cells (remember 2 switch positions per load cell). Insure load cell excitation is on with a 10-min. warm-up and the R-Cal switch is in the weigh (off) position. Attach DVM to signal test points, turn on one load cell at a time and adjust for approximately 0.0 mV using the corresponding ZERO potentiometer. You have approximately +/- 25 mV of range. (See diagram below)



Load scale to near capacity (precision is not necessary here). Set all SPAN potentiometers fully CW (clockwise). Switch on one load cell at a time and record the mV output for each load cell. Note which load cell has the lowest signal level. Now adjust the remaining load cells to match the output level of the lowest using the corresponding SPAN potentiometer. (See diagram below)



R-Cal: The Smart Junction Box (S4J1) has a built in fixed value shunt calibration resistor. This resistor is switched by DIP switch position 9. It can also be switched by remote contact closure. Wire remote contacts to Remote R-Cal terminal (J7). If using remote R-Cal be sure to set DIP switch position 9 to "weigh" position. The R-Cal feature is extremely useful for verifying proper scale operation and trouble-shooting a malfunction of the scale. It is typically implemented in the following manner: after all S4J1 adjustments are made and the scale has been calibrated to the indication device, empty the scale to its dead-load weight. Switch all load cells off. Turn on one load cell at a time and switch R-Cal to test. Record the mV signal value at the S4J1 test-points and the false weight value displayed by the indication device. Do this for each load cell and then switch on all load cells and set R-Cal to test and record this value as above, this is the system R-Cal number (value). A sample R-Cal record log is shown below,

Scale Identification _____

Calibration Date _____

System R-Cal # _____mV / _____lb.

Load cell # 1 _____mV / _____lb.

Load cell # 2 _____mV / _____lb.

Load cell # 3 _____mV / _____lb.

Load cell # 4 _____mV / _____lb.

With this data record maintenance R-Cal verification can be performed against the System R-Cal values and if the values agree within approximately +/- 1% the scale is functioning properly. If not compare values for load cells 1 through 4 to locate the defective cell(s). Note: R-Cal verification and trouble-shooting must be performed with the scale in the same load state as when the R-Cal values were initially recorded e.g. at dead load.

Expansion: The Smart Junction Box (S4J1-EP) offers an EXPANSION port (J5) to facilitate daisy-chaining of multiple S4J1-EP's for systems comprised of more than four load cells. Cable entry for use in daisy chaining must be added to enclosure and should be ordered from factory with expansion modification. The first S4J1-EP in the daisy chain would be interfaced to the indication device via the INDICATOR port (J6) and the EXPANSION port (J5) would interface to INDICATOR port (J6) of the second S4J1 in the chain. This convention is used for all S4J1-EP's in the chain.

Caution: All adjustments and R-Cal value acquisitions that necessitate switching all load cells off, when applied to a multiple S4J1 system mean just that. Turn off all load cells on all S4J1's. Any load cell circuits, which are unused, must have the corresponding switches set to the off position.