

# *IQ plus® 800/810 Digital Weight Indicators*

## Analog Output Option

PN 19357

The IQ plus 800 supports one analog output module installed on its main board. The IQ plus 810 can accommodate two analog output modules—one on the main board, the second on the optional expansion board. Outputs can be set up for 0–10 volt or 4–20 mA analog output. IQ plus 810 models with two analog output modules installed can configure each module for either 10V or 20 mA operation. Each module has separate calibration parameters in the ALG OUT configuration menu.

A single analog output module is installed on the back of the main board, immediately behind the setup switch. A second module (IQ plus 810 models only) can be installed on the back of the expansion board.

The J1 connector on the analog output module is used to connect the analog output to the receiving device.

### Analog Output Module Installation

To install or replace the analog output module, ensure power to the indicator is disconnected, then place the indicator face-down on an antistatic work mat and open the enclosure. Loosen all in-use cord grips before separating the enclosure halves.



#### Caution

Use a wrist strap to ground yourself and protect components from electrostatic discharge (ESD) when working inside the indicator enclosure.

#### CPU Board Installation

Mount the analog output module on its standoffs in the location shown in Figure 1 and plug the module input into connector J6 on the CPU board.

#### Expansion Board Installation

Mount the analog output module on its standoffs in the location shown in Figure 2 and plug the module input into connector J4 on the expansion board.

**NOTE:** Ensure jumpers JP1 and JP2 are installed in position 2 (POS2, pins 2 and 3) as shown in Figures 1 and 2.

Route the output cable through a cord grip on the indicator backplate, then connect the output cable to the analog output module as shown in Table 1. For the IQ plus 800, see *Installing the IQ plus 800 Replacement Setup Switch* on page 2. For the IQ plus 810, reassemble the enclosure, then configure and calibrate the indicator and analog output as described on page 3.

| Pin | Signal        |
|-----|---------------|
| 1   | + Current Out |
| 2   | – Current Out |
| 3   | + Voltage Out |
| 4   | – Voltage Out |

Table 1. Analog Output Module Pin Assignments

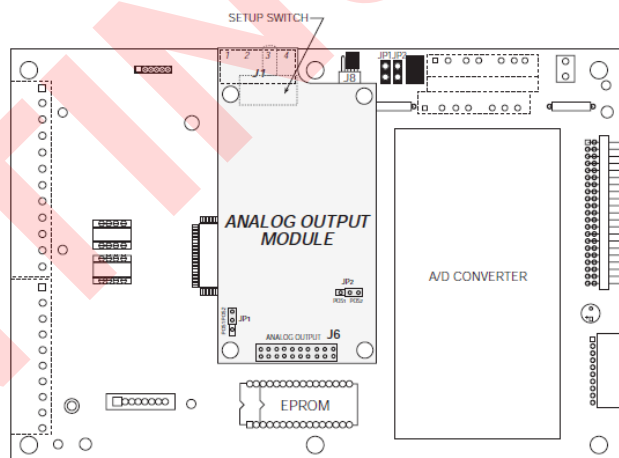


Figure 1. Analog Output Installed on CPU Board

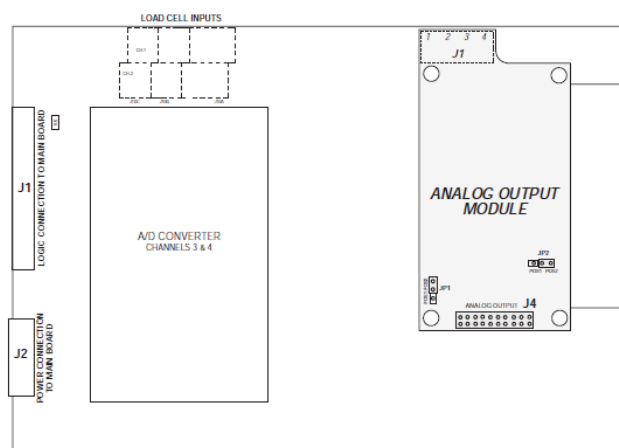


Figure 2. Analog Output Installed on Expansion Board

## Installing the IQ plus 800 Replacement Setup Switch

The analog output option includes a replacement setup switch for the IQ plus 800. The replacement toggle switch mounts on the backplate U-bracket to allow access to setup mode without opening the enclosure when the analog output option is installed.

To install the replacement switch, follow the procedure shown in Figure 3. When done, reassemble the enclosure, and follow the configuration and calibration instructions on page 3.

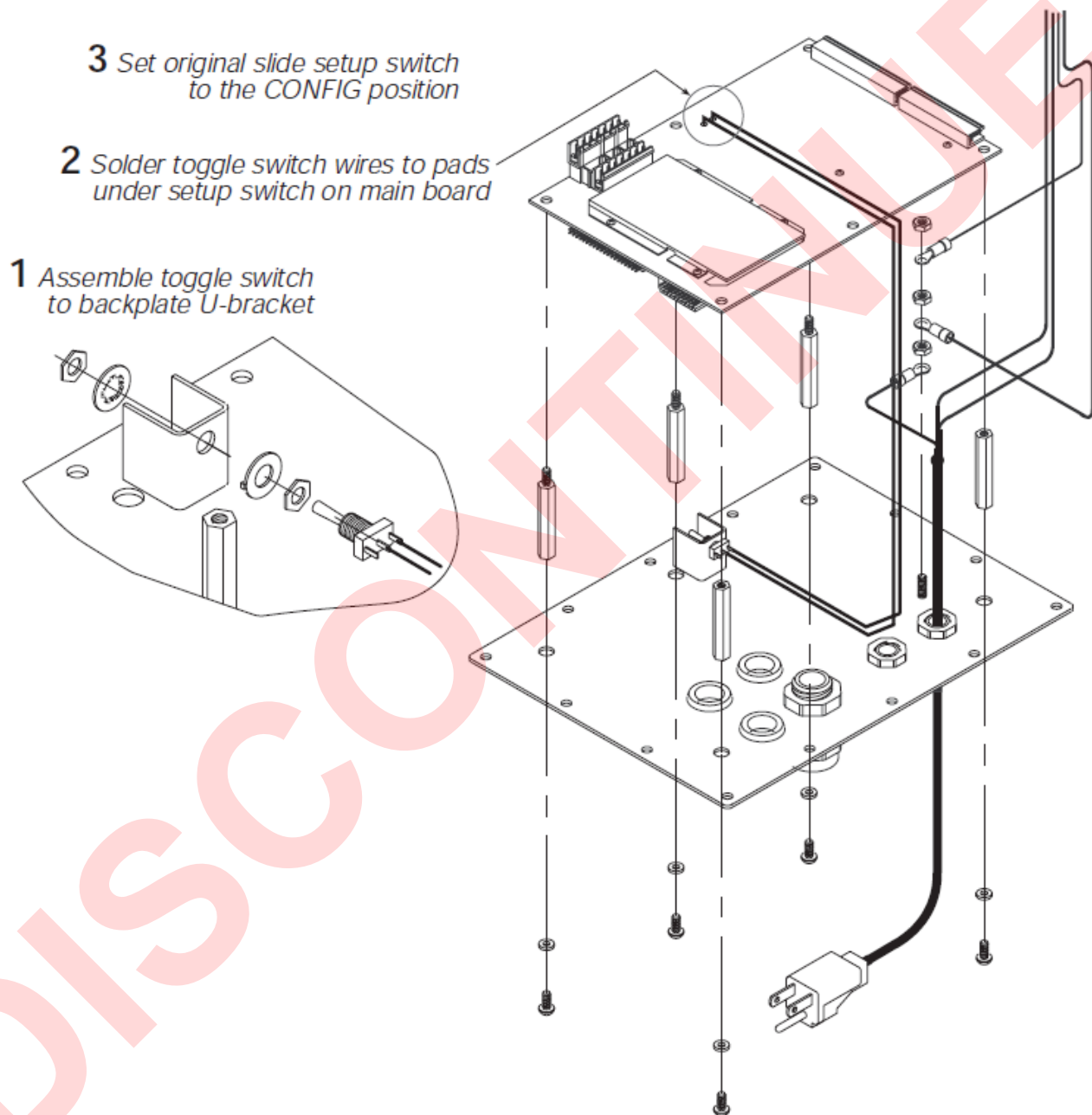


Figure 3. IQ plus 800 Replacement Setup Switch Installation

## Analog Output Calibration

The following calibration procedure requires a multimeter to measure voltage or current output from the analog output module.

After the IQ plus 800/810 is configured and calibrated to the scale, calibrate the analog output. Enter setup mode and go to the analog output (ALG OUT) menu (see Figure 4). Move down to the ALGOUT1 prompt to calibrate a single analog output module. If calibrating a second analog output, go to ALGOUT2.

**NOTE:** The analog output must be calibrated *after* the indicator itself has been configured and calibrated.

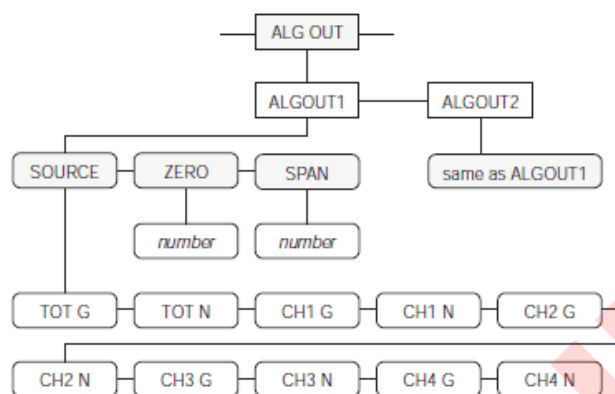


Figure 4. Analog Output Menu

Next, choose the source that the analog output will track. The SOURCE parameter allows selection of gross or net input from channel 1, 2, 3, 4, or the total channel. For calibration, set the SOURCE input to a channel gross input to avoid working with tare values. You can reconfigure the SOURCE input to track a net value when calibration is complete. After making your selection, move up one level, then move horizontally to the ZERO parameter to begin entering coarse zero and span values.

### Entering Coarse Zero and Span Values

The coarse zero and span values give the indicator a starting point from which to begin calibration. These values must be entered before final calibration.

**Coarse Zero Value:** To enter the coarse zero value, move down from the ZERO prompt. If you are using 0–10 V output, enter 7.5 for the coarse zero value; if you are using 4–20 mA output, enter 3100. After entering the appropriate value, press ENTER.

**Coarse Span Value:** Next, the coarse span value is calculated. The calculation is based on the type of output and the weight value of the full span output.

The following values are used as constants, depending on the type of output:

- 15300 For 0–10 V output
- 12400 For 4–20 mA output

To calculate the coarse span value, divide the appropriate constant value from above by the full span weight value. For example, to calculate the coarse span value for a 0–10 V output at 5000 lb, divide 15300 (0–10 volt output constant) by the full scale output of 5000:

$$15300/5000 = 3.06$$

This calculation results in a coarse span value of 3.06. Enter this value under the SPAN prompt, then press ENTER.

### Final Zero and Span Calibration

To perform final zero and span calibration, the receiving device must be connected to the indicator. Use the setup switch to return to normal weighing mode. Verify that the scale reads zero with no weight applied and shows the correct span value with the test weight. When the indicator reads correctly, use the setup switch to return to setup mode. Remain in setup mode for the following steps.

**NOTE:** You may prefer to use a digital multimeter for the following steps.

**Final Zero Calibration:** With the scale cleared of weight, check that the value the receiving device reads zero. If the receiving device is showing zero, continue to the final span calibration. If the receiving device reads slightly less than zero, enter a slightly larger coarse zero value for the ZERO parameter. You may need to make several adjustments before the receiving device reads zero. If the receiving device reads slightly above zero, enter a slightly smaller number for the ZERO parameter, then check the receiving device again. Continue adjusting the coarse zero value until the receiving device reads zero.

**Final Span Calibration:** Put the calibration test weight back on the scale, then check the value returned to the receiving device. Remember that if the test weight is only 50% of the full span value, the analog output should be adjusted to only 50% of its span value. If the value is not correct, adjust the SPAN parameter by entering a slightly smaller or larger value as described for final zero calibration.

When final span calibration is complete, verify the zero and span output readings at the receiving device. When done, return the indicator to normal weighing mode. Calibration is now complete.

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