

ivQ-C & D Range Adjustment and Calibration Manual

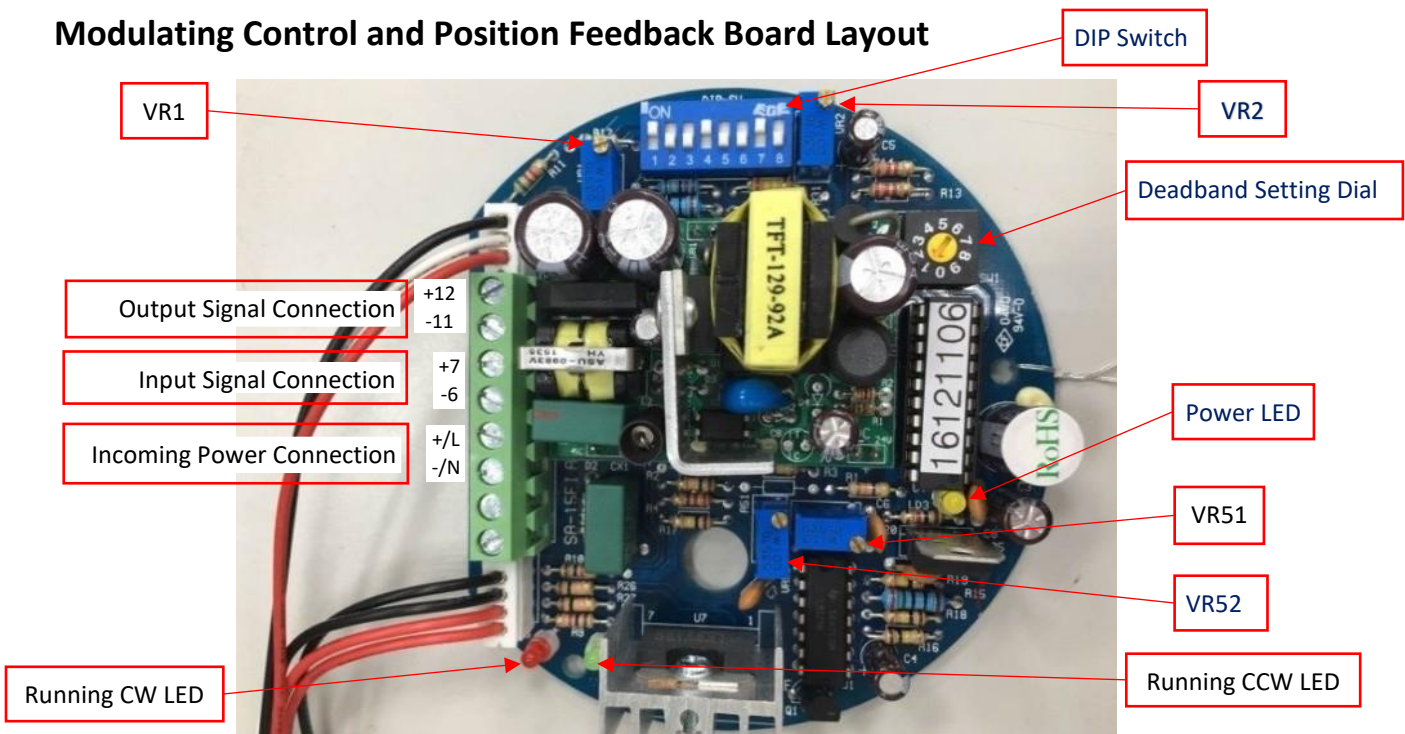
1. Modulating Control and Position Feedback Option Supplied:

This manual provides necessary information for calibrating the modulating control board and making any fine tune adjustments to ivQ-C & D Range actuators. Each unit is shipped from the factory with initial calibration complete for a 0° to 90° operation.

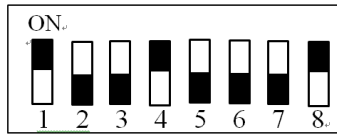
If changes were made to the OPEN/CLOSE (CCW/CW travel) limit switches or new settings wish to be made, the following steps must be followed for proper calibration of the unit:

1. Confirm actuator setup via the “DIP Switch Setting Chart”.
2. Confirm actuator performance via the “Deadband Setting Dial”.
3. Reset the potentiometer via “Potentiometer (VR) Adjustment”
4. Reset the OPEN and CLOSE positions via “OPEN/CLOSE Calibration Procedure”.
5. Also refer to the “Troubleshooting Chart” at the end of this manual for additional help.

Modulating Control and Position Feedback Board Layout

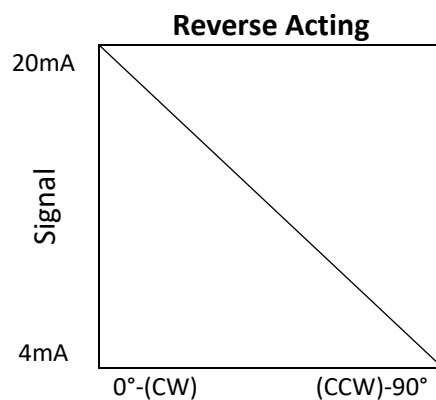
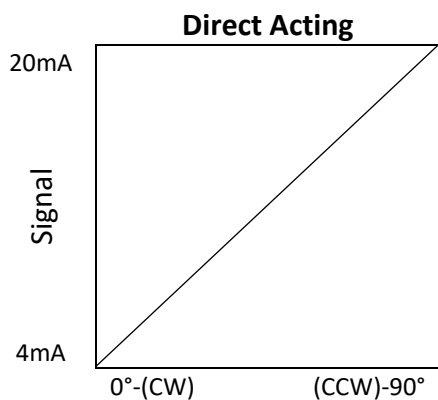


DIP Switch Setting Chart (Factory Setting is shown in RED)



Switches 1 and 2 correspond to the input signal setting, switches 3, 4, and 5 correspond to the output signal setting, and switches 6, 7, and 8 correspond to the actuator command settings. If any changes are made, turn OFF power and restart to activate the changes.

DIP Switch Setting Options								Functions
1	2	3	4	5	6	7	8	
ON	OFF							4-20mA Signal Input
OFF	OFF							1-5V Signal Input
OFF	ON							2-10V Signal Input
		OFF	ON	OFF				4-20mA Signal Output
		ON	OFF	ON				2-10V Signal Output
					OFF			Direct Acting Mode (See graph)
						ON	ON	Stay in place on Loss of Input Signal
						OFF	ON	CW on Loss of Input Signal
						ON	OFF	CCW on Loss of Input Signal
					ON			Reverse Acting Mode (See graph)
						ON	ON	Stay in place on Loss of Input Signal
						OFF	ON	CCW on Loss of Input Signal
						ON	OFF	CW on Loss of Input Signal



Deadband Setting Dial

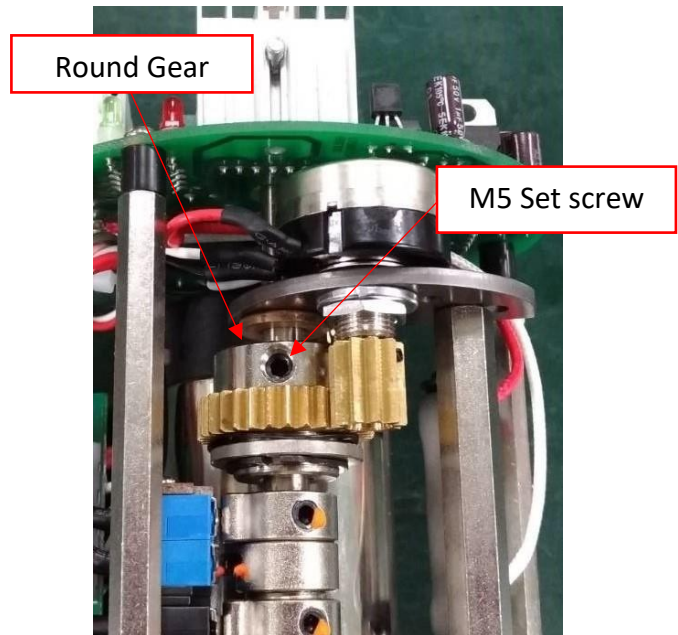
The dial rotates clockwise from 1 through 0, 1 being the highest sensitivity rating and 0 being the lowest. As you increase the sensitivity, you are increasing the amount that the actuator reacts to an input signal change. The factory setting is typically set to 3.



Potentiometer (VR) Adjustment

The main potentiometer (also referred to as VR or main Variable Resistor) is factory set to operate 90°. If adjustment is required, it should be adjusted once the OPEN/CLOSE limits are set, then move the actuator to the fully closed position.

- For iVQ-C Units – loosen the set screw on the round gear and rotate fully clockwise, less than one turn until it stops. Do not over-tighten as it may damage the pot. Re-tighten the set screw.
- For iVQ-D Units – loosen the set screw on the round gear and rotate fully counter-clockwise, less than one turn until it stops. Do not over-tighten as it may damage the pot. Re-tighten the set screw.



OPEN/CLOSE Calibration Procedure

If travel cams were modified from factory settings, a re-calibration procedure must be followed to ensure that the actuator will work correctly. (In the following procedure, it is assumed that the actuator is in the fully closed CW position and the DIP switches are set to the factory setting).

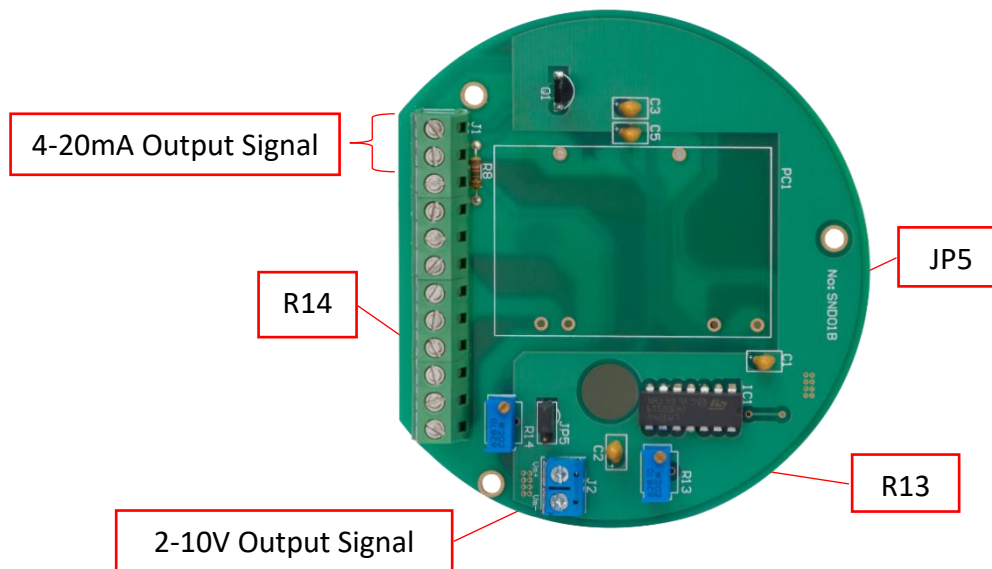
Refer to the Modulating Control Board Layout above for component locations:

- Generate an accurate 4mA signal to the modulating board.
- Check to see if the feedback is equal to the 4mA signal.
- If not, adjust VR52 until you achieve a 4mA feedback signal.
- Adjust VR2 to make the Red LED on the modulating board change state
- Set the VR2 to the point where the Red LED stays ON steady (not flashing).
- CW setting is now complete.
- Generate an accurate 20mA signal to the modulating board, the actuator will rotate CCW.
- Check to see if the feedback is equal to the 20mA signal.
- If not, adjust VR51 until you achieve a 20mA feedback signal.
- Adjust VR1 to make the Green LED on the modulating board change state.
- Set the VR1 to the point where the Green LED stays ON steady (not flashing).
- CCW Setting is now complete.

2. Position Transmitter Option

For this option, the following steps need to be performed: Connect to terminals 8 and 9 (as marked and shown below) if a 4-20mA output signal is desired. For a 2-10V output signal, connect to J2 and add the jumpers to JP5 as shown in the wiring diagram. For fine adjustment of the output signal, use R13 for 20mA, use R14 for 4mA, clockwise to increase and counter-clockwise to decrease the signal adjustment.

Position Transmitter Board Layout



Troubleshooting Chart

Problem	Remedies
Modulating controller is not functioning.	Faulty main potentiometer (VR). Replace VR.
	Remove the input signal wires. Operate actuator to the fully closed position and readjust the VR. Refer to section "Potentiometer (VR) Adjustment" of this manual.
	May be a wrong input signal, review "DIP Switch Setting Chart" in this manual.
	Faulty modulating board, must be sent back to factory for inspection.
The actuator is running open and close, but it is not modulating.	The signal is reversed or there is a signal failure.
	Improper wiring, check that terminal #8 is hooked up to "-" and terminal #9 is hooked up to "+".
The indication lights are flashing after the operating check has been completed.	There is an incorrect setting, review the "Open/Close Calibration Procedure" to determine the problem.