**Procedure for calibrating the magnet’s pressure sensors while online
Rev B**

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Oct 19, 2016

Open RSlogix 5000 (version installed should say 16.03)

Chose program SHMS\_Controls\_rev\_11.ACD, located in skylla7/RSLogix 5000/Projects/

Toggle offline to Rem Run

Under task bring up the Q2 function block routine sheet 12 for the He and LN2 pressure readings

Under I/O configuration expand 1756 backplane, then node [3], then 25 CN2/B Q2.

Double Click on I/O [6] 1756-IF16 Q2\_analog\_input\_2 to open the module Properties form.

Click the configuration tab

Click channel 9 for the Helium pressure (or channel 10 for the LN2 pressure).

Record values before modifying them. Normally the scale factor is ~2 to 1.

Change the Engineering unit to be identical to the High and Low Signal (one to one scaling) should be in the range of 10V for the high signal and 0V for the low signal.

Sensor offset should be zero.

Press the ok button, prompt will ask you if it’s okay apply changes click yes this will close the I/O configuration screen.

Record output of Q#:6:I.Ch9Data as a function of pressure read from the calibrated pressure gauge. Record as the system is being pressurized as a leak may skew readings at higher pressures. Hold the pressure at low pressure (5 psig) and max pressure of 40 pisg to obtain a good sample reading. Max pressure for calibration is limited by Dataforth signal conditioners range of +/- 20mV. Ensure that the signal does not flat line by taking pressure over 40psig (say 45psig) while observing raw voltage signal. If signal is not flat line decrease pressure to 40psig and record voltage.

Enter the voltage output of the sensor at the two pressures into the front end calibration of the unit, the table shows what the engineering value should be for a zero offset.

Re-open the module properties by:

Double Click on I/O [6] 1756-IF16 Q2\_analog\_input\_2 to open the module Properties form.

Click the configuration tab

Click channel 9 for the Helium pressure or channel 10 for the LN2 pressure.

Enter the new high and low values, the engineering units and offset and then press okay. Prompt will ask you if it’s okay applied changes click yes this will close the I/O configuration screen.

Cross check the new pressure readings with the calibrated gauge.

Adjust as needed.

Once the values are verified “save as“ the program, using a new version number.

Exit program.

Calculation of engineering units: (with offset set to zero)

Table Engineering units

|  |  |  |  |
| --- | --- | --- | --- |
| Raw Voltage | Pressure gauge (psig) | Engineering Unit | Pressure Atm (abs) |
| Value recorded at 5 psig | 5 | 1.718 | 1.34 |
| Value recorded at 40 psig | 40 | 13.743 | 3.72 |

[Engineering Scale factor+ offset] x 2.90866 / 14.696 + 1.00 = Pressure [Atm]