

TECHNICAL NOTE # 204B

RE: Troubleshooting Cable Faults
Date: March 25, 2011

Cable Faults occur when the sense wire DC voltages are pulled either higher or lower than normal.

The normal voltages for the sense wires are 0.79 and 4.21 VDC. The “Diff” voltage is calculated by the formula:

$$\text{Diff} = (5.00 - \text{HI}) - (\text{LOW} - 0.00) \text{ where } 5.00 \text{ and } 0.00 \text{ are the rails.}$$

$$\text{Diff} = (5.00 - 4.21) - (0.79 - 0.00)$$

$$\text{Diff} = 0.79 - 0.79$$

$$\text{Diff} = 0.00$$

If the “Diff” voltage exceeds +/- 0.30 volts, a Cable Fault Alarm is activated. Note that all external inputs monitored by the faulty cable will also go into alarm.

In order to determine where the problem is a simple test will determine if the problem is the PM, cable, or LU/TU.

TESTING THE SYSTEM

FIRST, disconnect the sense wires from the PM cards terminal strip and short the two terminal strip inputs together. Retrieve the sense wire voltages from the PM and check the “Diff” value and “Sens A and B High and Low”. If the Inputs are 2.2 and 2.8 and the “Diff” is 0.00 +/- 0.03, then the PM is good. The problem is with the cable or LU/TU.

SECOND, reconnect the sense wires to the PM. Disconnect the sense wires from the LU/TU and short the two sense wires together. Retrieve the sense wire voltages from the PM and check the “Diff” value and “Sens A and B High and Low”. If the Inputs are 2.15 and 2.85 and the “Diff” is 0.00 +/- 0.03, then the PM and Cable are good and the problem is with the LU/TU. If it is not within spec, then the problem is with the cable.

Cable Faults can occur from water, opens, and shorts. Be sure to check for pinched sensor wires at the termination blocks on the PM and LU/TU and also any splices.

The Input readings above are a +/- 5% tolerance.