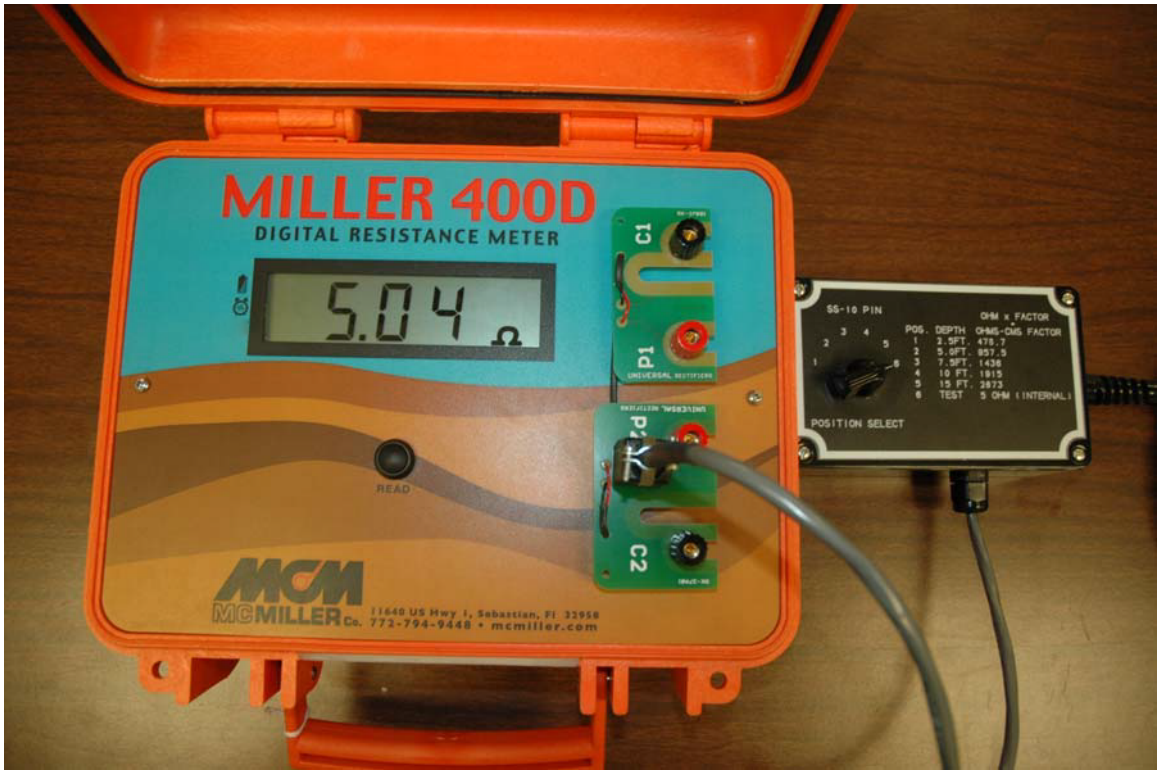
Integration of the Miller 400D Digital Resistance Meter with Universal Rectifiers' 10-Pin (Selectable Depth) Cable Harness System

NOTE: Universal Rectifiers no long manufactures or supports the 10-Pin Cable Harness System

As indicated in the photograph below, the Universal Rectifiers' (P1/C1 and P2/ C2) connector PCBs integrate directly with the banana plug terminals on the Miller 400D Digital Resistance Meter.



The above photograph shows the Miller 400D reading the internal 5Ω test resistor in the switch box.

Reading Accuracy Data:

Resistance values read by the Miller 400D unit are compared to various calibrated resistor values in the table shown below. For the data shown in the table, the cable system "taps" utilized correspond to the 2.5 feet setting on the Universal Rectifiers' switch box.

As can be seen in the table, the Miller 400D Resistance Meter provides a high degree of measurement accuracy all the way up to resistance values approaching 500kΩ (250MΩ.cm equivalent resistivity value for the 2.5 feet switch setting), in the case of using the cable harness.

Above a resistance value around 500kΩ, mutual capacitance effects, by virtual of the leads being bundled together in the cable harness, result in a significant error being introduced in the resistance reading which becomes larger as the resistance value increases beyond 500kΩ. Since 500kΩ in this case would represent a soil resistivity value of 250MΩ.cm, it is unlikely that errors, due to mutual capacitance effects, will be encountered in practice, accept in soil approaching zero moisture content, however, it is important to be aware of this phenomenon.

Calibrated Resistor Value (& corresponding Resistivity Value)	Meter Reading Using Cable Harness (2.5 ft switch setting)	Meter Reading Using 4 Physically-Separate Test Leads
10Ω (5,000Ω.cm)	10.4Ω	10.3Ω
50Ω (25,000Ω.cm)	50.2Ω	50.2Ω
100Ω (50,000Ω.cm)	99.2Ω	99.2Ω
1kΩ (500,000Ω)	997Ω	997Ω
50kΩ (25MΩ.cm)	49.8kΩ	49.9kΩ
100kΩ (50MΩ.cm)	99.7kΩ	100kΩ
200kΩ (100MΩ.cm)	199kΩ	200kΩ
500kΩ (250MΩ.cm)	489kΩ	502kΩ
1MΩ (500MΩ.cm)	920kΩ	1.0MΩ
5MΩ (2,500MΩ.cm)	2.3MΩ	5.0MΩ