The iDMV 510 Wireless Multimeter

The advent of mobile devices with connectivity to everything is everywhere. It was just a matter of time before that connectivity came to electrical test instruments and multimeters in particular. In fact multimeters represent an excellent application for connected devices. Properly configured, mobile devices connected to multimeters allow inexpensive electrical data logging, measurement at a distance, easy sharing of data with customers and colleagues, alternate visualization methods, and simplification of features that are more complicated on traditional multimeters. Let us look at a few of these applications in greater detail.

Intermittent electrical problems are difficult. While the customer says that the problem doesn't happen all the time, when it occurs the problem causes lots of trouble. But it's intermittent and never happening when the electrician is there to see it. What's an electrician to do? The iDVM 510 iOS and Android enabled wireless multimeter from Redfish Instruments with on-board data logging provides a compelling answer. Configure the meter using the free mobile device app (iOS 7 or Android Jellybean or later) to log over a period of minutes, hours or days. The rate at which the data is logged, the number of data points, and the total logging period are interrelated. Selecting two of these (rate, data points, or duration) determines the third. The on-board memory can store up to 20,000 data points. Since the memory is on-board, there is no need to leave the mobile device wirelessly tethered to the meter — just set it up on the mobile device and the iDVM does

the rest. Data logging can also be initiated from a single button press on the iDVM 510 itself. After the logging period, the iDVM 510 will provide an alert via the app that data is available to be down loaded. Once the data is on the mobile device, the app graphing can be used to find low voltage, drop out, or spikes — problem identified! At $150.00 the iDVM 510 provides an economical tool to identify pesky problems or simply view electrical data over an extended period of time.

The iDVM 510 utilizes Bluetooth Smart sometimes known as Bluetooth Low Energy (BTLE) to connect to the mobile device. This latest version of Bluetooth has extended range (up to 100 feet — line of sight) and reduced power consumption allowing for extended battery life. Bluetooth connectivity allows "measurement at a distance." As an example, consider a failing blower in the attic. Because no one wants to crawl back and forth into the attic, instrument the blower with the iDVM 510, and watch the current change conveniently from downstairs. The meter can periodically check the current, set an alarm, or send an alert while the meter and mobile device are tethered. Other circuits can also be checked to see the impact on the blower current.

The intuitive user interface of mobile devices allow easy configuration, data storage (on the meter or on the mobile device), and visualization. Because the measurements are displayed on the mobile device as well as the meter, the software permits a variety of visualization methods. The digital value of the reading can be displayed. However maybe the better visualization may be a needle meter or a "VU" meter. These different visualizations are easily accessible (by the user) by simply swiping the display to a new visualization option. Data graphing can also be turned on or off and configured as needed. Data can be saved directly to the mobile device, transferred to DropBox, or emailed. All of the communication and visualization tools are already built in to today's modern mobile operating systems making the software
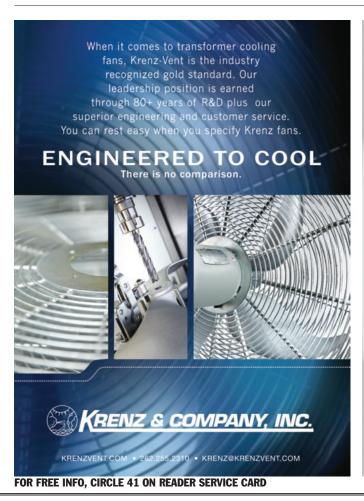
enhancements very complimentary to your traditional multimeter interface — the LCD.

The addition of the mobile device interface provides additional features that would cost hundreds or even thousand of dollars more. The data logging feature alone is very expensive on other meters due to the complexity of adding the technology and electrical isolation to the meter. The ability to immediately email data, post it to a web server, etc., from a mobile device makes portability of data simpler and not generally available elsewhere at any price. The data can be configured as you need it. A function in the software allows the data to run through a user defined function to produce data with relevant units. For example, a thermistor provides a resistance value that is directly related to temperature. The correlation can be modeled using a polynomial fit to the resistance data producing very accurate temperature measurements. The mobile device software allows the user to enter the correlation equation including units so that the data is displayed or saved as tem-perature not resistance. The many features enabled by this connection to mobile devices are just now becoming known. The future features can only be imagined.

The iDVM 510 is first and foremost a professional-grade True RMS multimeter. All the software in the world or slick gadgetry cannot mask poor quality, lack of attention to detail, or safety failures. The iDVM 510 has been subjected to a variety of safety and compliance testing to insure that the meter can be used safely and within governmental guidelines. Professional electricians and engineers are faced with lethal voltage often or sometimes infrequently. Either way, it is critical that the meter in your hand has been tested to assure that it can be used without causing serious injury. The iDVM 510 has been tested and certified by Intertec/ETL, a nationally recognized testing laboratory, to comply with the safety standards established in IEC/EN61010. The meter is rated to Category III (CAT III) 1000V and Category IV (CAT IV) 600V and able to withstand 8KV over voltage.

Ingress protection (IP) of 54 means that the meter can withstand dirty and dusty environments and sprayed water. These specifications are critical to professionals, and should be carefully considered by occasional users too. The difference between a $50 meter and a $150 meter could, literally, be a matter of life or death. Don't cheap out on electrical measurement tools — buy quality and safety.

The iDVM 510 started as a very capable and safe True RMS multimeter to which was added the many features made possible by the advent of mobile devices. Multimeters have not changed substantially since the introduction of the LCD display. Linking multimeters to mobile devices is a similar quantum change in the usability of the multimeter. Most frequently a multimeter will be used in the traditional manner, but in those cases where the addition of real time data graphing, measurement at a distance, data logging, and data emailing are important the iDVM 510 provides this capability at a very competitive price. ❏