

The new Fluke 233 wireless digital multimeter

Application Note

A sensible solution to an age-old problem—where to place your meter display

What if, as an electrical professional, you could take a clamp-on ammeter reading using your digital multimeter (DMM) with the disconnect door or MCC cubicle door closed?

What if a DMM voltage reading could be taken outside of both the flash protection boundary and the limited approach boundary?

Imagine observing a specific PLC input on the input card while standing thirty feet from the PLC to operate a push button at the equipment control station?

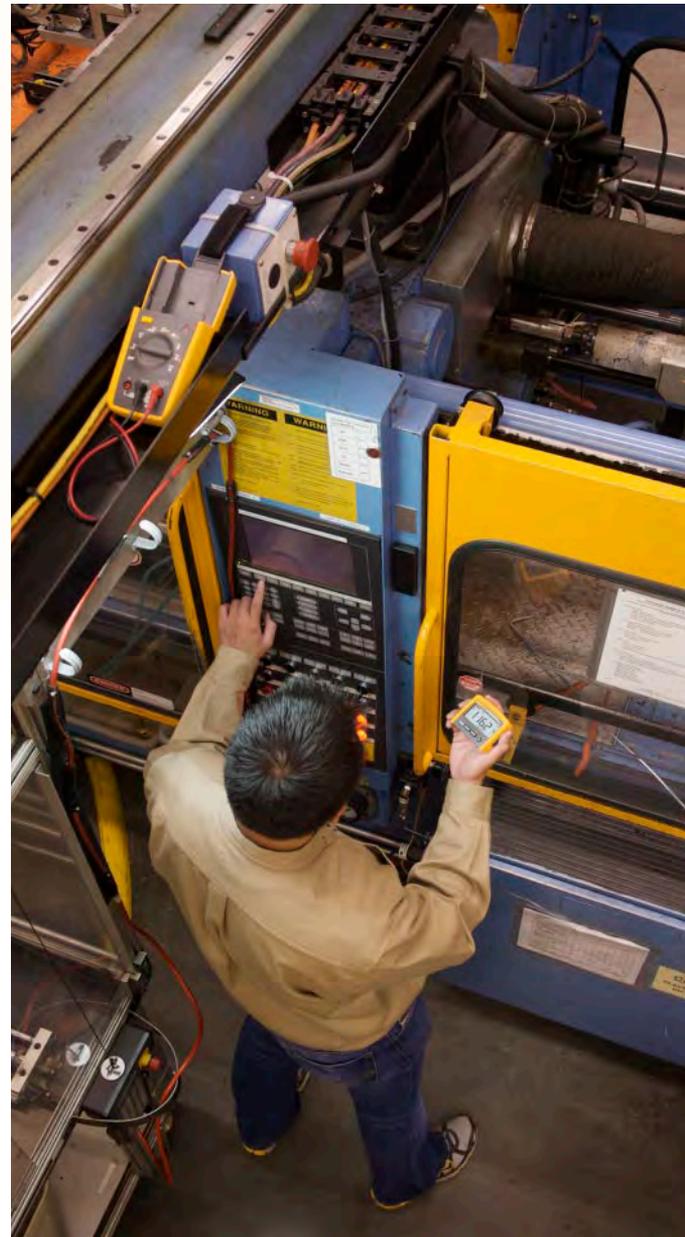
How many times have you said, “If I only had a third hand.” If that were true, how much easier would it be to read your DMM? And, how much safer?

Using wireless technology and a detachable display, the new Fluke 233 True-rms DMM allows the user to observe and record data up to thirty feet from the location of the test probes and meter body. Moreover, the strongly magnetized strap option for the meter and the separate magnet in the removable display allow for convenient location of meter components.

For example, you could attach the meter to the inside of an open control-cabinet door while the meter display, being considerably smaller than the meter body, was attached at a safe location inside the panel under test. If you do much troubleshooting or equipment startups, you’ll immediately recognize the convenience and time savings of not having to adjust your eyesight to a different location in order to focus on a reading each time you move the test leads.

Thanks to particular technology used in this meter, many of the earlier concerns about using a wireless meter—especially interference issues—go away. There is no problem with radio frequency interference with equipment such as PLCs, VFDs and electronic control devices. Sufficient shielding on the meter and the removable display prevents electronic interference with meter readings from surrounding equipment. In fact, the Fluke 233 has been tested under severe RF conditions with no ill effects.

Even so, observing the digital readout remotely does require some forethought. Pay attention to meter body and remote display location. If the signal between the two components becomes weak, the wireless symbol in the remote display will begin flashing to alert the operator. The transmission



The removable display option allows you to connect the multimeter body in hard-to-reach locations and then conduct tests remotely while monitoring readings on the detachable meter screen.

distance is designed for thirty feet. However, in the field, successful readings have been taken at greater distances.

Outside the hazard zone

Safety when performing work involving electrical hazards is of course paramount. The NFPA 70E, Standard for Electrical Safety in the Workplace, general requirements for safety related work practices, requires test instruments, equipment, and accessories to be “designed for the environment to which they will be exposed, and for the manner in which they will be used.” The 233 is a rugged DMM that can be used as just as any other DMM in the field. Yet, it also offers the ability to safely take readings while energizing and de-energizing equipment. How many times have you had to place a meter in a precarious—and possibly unsafe position—in order to observe the readout? The wireless greatly reduces the risks involved in such procedures.

A common practice in the electrical field is to have someone hold the meter as the technician reaches inside the control panel or switchgear to place the test leads for the measurement. This “meter reader” then becomes exposed to virtually the same shock and arc-flash hazards as the individual placing the test leads. With the 233’s detachable head, this “meter reader” can now stand safely outside of the Flash Protection Boundary while recording readings. A common complaint in the field is the inconvenience of taking readings while dressed out for

Hazard Risk CAT III or CAT IV. By having the person observing the meter readout back outside of the above boundaries, protective clothing requirements can most probably be reduced to a lower Hazard Risk Category—again simplifying the measurement process.

Troubleshooting PLCs

LED indication on input and output cards of PLCs is a great way to troubleshoot them—as long as you are at the PLC. Few things are more frustrating than trying to adjust a limit switch, certain proximity switches, or a photo eye. Quite often the radio call must go out for help as one person performs adjustments on one of these safety switches while another person observes the PLC input indicators. It’s now a whole lot easier to attach the true-rms DMM to the correct terminals, and take only the wireless display with you to the switching device.

What if...

In addition to questions about RF interference, some other valid questions arise when using this meter in the field. “What if I’m taking a reading and want to remove the head to walk away from the meter and operate a switch at a control station. Will I lose my reading?” The answer is, “No.” If a reading appears on the meter face, then removing the meter display will not affect the meter reading. In fact, the only indication on the display that you have removed the display from the meter base is that you will see the wireless symbol appear, indicating you are in the wireless mode.

What if you want to see if the relay drops out when the “stop” push button is depressed? Here, you would simply leave your leads attached to the relay coil terminals (with the alligator clip accessories attached to the ends of the test leads), and with one hand easily remove the wireless display by depressing the two release latches and slide it away from the meter body. Next, walk to the control station, make sure your meter head and body are communicating, and either hold the removable head or magnetically attach it to the control station. Then depress the pushbutton and observe on the meter display what has just happened—up to thirty feet away.

If more than one technician in the shop is using the new model 233, there will be no problem confusing displays. The remote display automatically syncs with whatever meter body to which it is attached. What’s more, the meter automatically assigns wireless channels, which virtually eliminates any possibility of interference between different meters in the shop.

Whether you have a need for that “third hand,” a safety concern, or simply crave convenience, taking electrical readings with a rugged, category-rated, remote display true-rms digital multimeter with wireless remote capabilities just makes sense.

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