

The ultimate meter for the ultimate electrician/industrial technician

Application Note

Most technicians have moments when the pressure to fix too many things at once pushes standards like electrical safety aside. Fortunately, a good all-purpose digital multimeter (DMM) can contribute a lot, to both operator safety and efficient job performance, without being complicated to use.

When Fluke designed the new 289 DMM, it set out to make the ultimate meter for industrial technicians. Extra, automatic safety features like ghost voltage detection, easier logging with better display for on-the-spot troubleshooting, filters for VFD output readings, and onscreen help. All features that industrial techs need, but all made very easy to use, so that they get used, and really do make a difference on the job.



Key features and applications of the Fluke 289 DMM

Saving, recording and TrendCapture

The Fluke 289 DMM provides the usual measurement functions, such as V ac, V dc, ohms, capacitance, A ac and A dc. And for all of these, the ability to have the meter monitor a circuit while the technician is busy elsewhere is probably the most valuable of them all.

For example, a technician can set the meter up to record ac voltage on a circuit of concern and then exercise loads at a remote location on that circuit. Returning to the meter, he can then view a TrendCapture display of the circuit's performance during the exercise. The saved

data appears as a stripchart-like recorder display on the face of the meter.

This kind of logging helps evaluate switching events and sudden load changes. If you need a permanent record of the process, you can save the results in memory for later transfer to a computer. The big difference between the Fluke 289 and other DMM logging systems is this ability to instantly see the history of a test, on screen, while still on site.

The Fluke 289 can also identify and save multiple recording sessions on the meter, without returning to the shop to download the results each time. That means the technician can conduct several of these tests on a single tour, making more efficient use of his time.

50 Ω (high power low ohms)

There are two features of this new, 50 Ω function that should be of particular interest to an industrial electrician.

The first is the ability to measure low resistances with 0.001 ohm resolution. To do this with a two-wire measuring system, short the test leads together and use the REL mode to zero out test lead resistances. Then, make firm connections to the test points, such as the stator winding of an induction motor, and read the winding resistance. By comparing the resistances of the

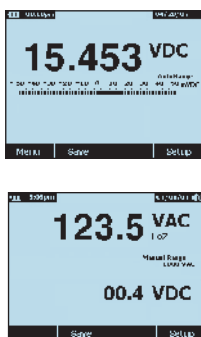
stator windings, you can uncover internal connection problems that may contribute to reduced motor performance or impending failure.

The second is the fact that the measuring circuit in this function uses a much higher measurement current than normal ohms functions, with an available voltage up to 20 V. For the industrial technician, who often works in high noise environments, this means that the low resistance readings will be more accurate in the presence of that noise, which may easily appear on the circuit of concern.

LoZ ac volts

This safety and accuracy function clearly identifies live conductors among those showing 'ghost voltage'—which appears on unconnected wiring in close proximity to live conductors.

The LoZ feature provides a load for the circuit that collapses ghost voltage to a zero reading, indicating that the conductor would be safe to work with.



The feature also automatically displays the ac voltage of a live circuit, as well as any dc voltage, in a dual display presentation. Besides the everyday safety of reliable measurements, LoZ is also useful for monitoring residual dc voltage while troubleshooting electronic power controls such as those used for theatrical stage lighting or motor drives.

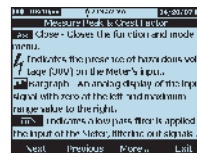
Low pass filter

The V ac and mV ac functions of the Fluke 289 DMM offer a low pass filter feature that reduces the ac measurement bandwidth to one kHz and below. Using this feature, you can monitor the output voltage and frequency of an adjustable speed motor drive accurately, while rejecting the higher frequency output voltages that often confuse lesser meters.

For example: Sometimes a drive output smoothing filter is installed to protect a motor from those higher frequency voltage components that can result in damaging high peak voltages. In that kind of setup, measuring the unfiltered voltage at the motor can insure that the filter is effective, by showing that the high frequency voltages are significantly reduced in value. That is indicated when the unfiltered reading nearly equals the filtered reading.

The (i) info button

With all the added features and functions in the Fluke 289, the new '(i) info' button provides a convenient alternative to the need to carry a manual or reference card around. To use this new feature, select the desired function, highlight it in the menu, and press '(i) info' to see a brief description of the function and its use. It's effectively a manual that's automatically turned to the right page as you move from measurement to measurement. This feature actually suggests uses for several of the new features and how to apply them. The 'i' info button is also multilingual; you can change the language.



So, besides being a meter that can be your ultimate helper, the new Fluke 289, with all of its capabilities and new features, is also the tool for the industrial technician who wants to better understand the many processes he or she may deal with. Using this meter, you can not only test for the usual voltages, currents, and resistances encountered in your daily work, but you can explore machine and circuit operations in more depth, learning as you go.

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11/2007 3184596 A-EN-N Rev A