

FOUR DECADES OF TESTING INNOVATION



40 years ago, the 5th Edition of the Wiring Regulations were issued. A lot has happened since then in the world of electrical test equipment, as **Ash Mohammed**, Managing Director of **Di-Log Group**, explains.

A hand wound insulation tester would be the most common form of test instrument that would be carried by the 1980s electrician, which would appear to be something from a bygone age to the apprentice of today.

To test in line with the current 18th Edition of the Wiring Regulations, four main tests are required: continuity, insulation, loop impedance and RCD testing.

One of the most important developments to affect all types of electrical test equipment has been the introduction of safety category ratings in line with IEC1010. Usually known as CAT rating, this relates to an instrument's ability to withstand transients (spikes) on the supply. This is important because if, while the instrument is being used, it experiences a transient that is beyond its capacity to handle, it is likely to be seriously damaged and may even injure the user.

Other important developments applicable to all test instruments include increasingly robust construction and, in some cases, weatherproofing. Older instruments were much more susceptible to damage than the latest models.

The latest models are also much more robust electrically, and unlike predecessors, will not be damaged if connected to a live circuit when carrying out a dead circuit test such as an insulation or continuity test. The best MFTs, like the Di-Log DL9118, will in fact resist damage even when connected to a three-phase supply after a dead circuit test has been selected and locked down.

Finally, many instruments of all types are now able to store test results for later downloading to a computer, a tablet or even a smartphone.

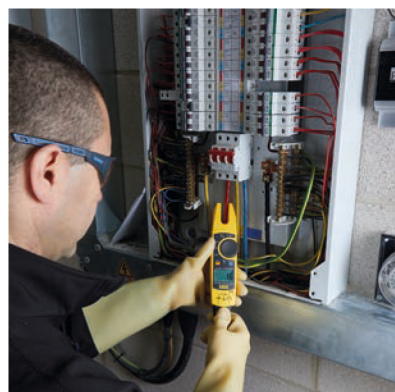
Continuity

Now let's look at the individual tests. Continuity testing has been around in one form or another since the earliest days of electricity, with the simplest form being no more than a bulb and a battery. Today, rather than using a separate continuity tester, most contractors use the continuity test function built into a multi-function tester or an insulation tester.

Testing has come a long way in the past four decades

“RCD testers first started to become more common around 40 years ago, and there have been substantial improvements in functionality over the years.”

Di-Log's DL9118 tester



Even with something as simple as a continuity test, significant progress has been made over the past 40 years. The best continuity tester now offers auto start, which saves a lot of time, especially when working at heights and keeping one hand firmly on the ladder. Some models allow the test current to be selected with a low current of 10mA for general work, to preserve battery life, and high current 200mA for certification work conforming to BSEN61557.

Insulation

Insulation is a vital part of any electrical installation. Therefore, it is no surprise that insulation testers have been around since the early 1900s. Today's modern instruments are very different to the earlier models with analogue needle movements and their hand cranked handle generators. The most advanced models have dual digital bar graph and digital displays which are particularly useful as the stability of the insulation resistance tells an experienced user a lot about any potential issues. In some cases, issues can be easily identified with the segmented bar graph display, as opposed to the exact value of the insulation resistance. Where a value symbolised in Meg Ohms is required for completing the test report, it is much easier to read on a digital display.

Other useful features offered by the latest insulation testers include test-lock function and remote switched probes that allow convenient two-handed testing. More advanced instruments incorporate a sounder to provide an audible indication that the insulation has passed alerting the user of any potential issues.

Loop impedance

Earth loop impedance testing is carried out to ensure that, should a fault occur in an electrical installation, enough current will flow to operate the fuse or circuit breaker. The objective is to make sure the circuit is disconnected fast enough to prevent overheating and possibly a fire.

The loop testers that have generally been available for around 40 years use a high current test, typically 10 amps. The benefit of a high current is that the test can be carried out quickly and the test results are unlikely to be influenced by electrical noise on the circuit.


High current loop test does have one big drawback – if the circuit is protected by an RCD or RCBO, which most installations have these days, the protective device will trip. To overcome this problem, modern loop testers have been developed that will use much lower test currents, typically milliamps, which will not trip the RCD or RCBO.

Other recent developments in loop testing include dual displays that simultaneously show loop impedance and prospective fault current. The latest loop testing technology fitted to the Di-LOG DL911x Series MFTs eradicates RCD uplift and reduced noise interference, enhances noise monitoring systems that alert the user to noisy supplies and has built in lead resistance compensation that makes it unnecessary to check the lead resistance before carrying out every test.

RCD testing

RCD testers first started to become more common around 40 years ago, and once again there have been substantial improvements in functionality over the years. Automatic testing has proved to be a big time saver.

Without this, the user would have to walk between the tester and the RCD to reset it on each occasion for four of the six tests that have to be performed on each RCD. With auto test, the user simply initiates the whole sequence once, then walks to the RCD and resets it each time. The user does not need to return to the instrument until the whole sequence of six tests are completed – which saves a lot of time.

Modern instruments provide the user with safety and performance features that make their job safer, easier and quicker. At Di-Log, we are constantly working to develop instruments that remain at the forefront of technology. 

Di-Log, dilog.co.uk