

# How will the 17th Edition Amendment 3 change the way you test electrical installations?

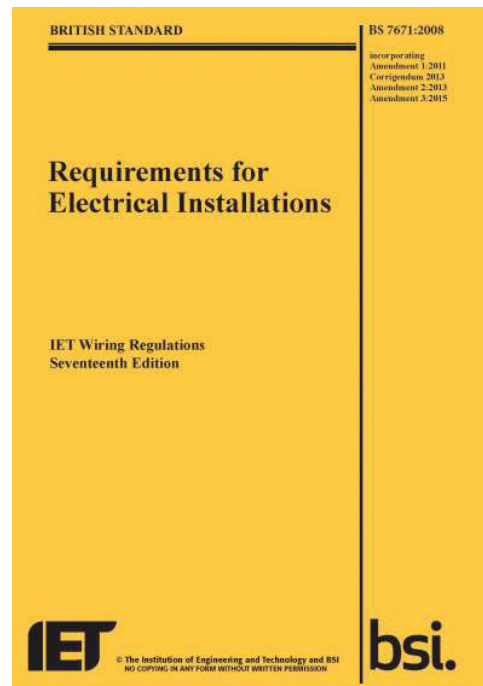
It's a lot more than just a colour change to the front cover. You will easily be able to spot the third amendment to BS7671:2008 IET Wiring Regulations from the bright yellow cover, but how will what's inside impact electrical installation testing?

The new wiring regulations will be published and effective from January 1 2015. There will be a 6 month transition period where electrical contractors can install to amendment 2 or amendment 3, after which it will be a requirement that all electrical installations designed and periodically tested will have to comply with the changes. There are many changes some of which are more significant than others to the testing and certification requirements for electrical installations.

From a testing perspective one of the most important areas is a reduction in all maximum earth loop impedance values  $Z_s$  for protective devices in tables 41.2-41.4 and 41.6. The existing values are based on a supply voltage of 230V which may not always be the case. The supply can dip below 230V, in which case, the necessary disconnection times required to prevent electrocution may not be achieved at the old pass / fail loop impedance values.

A minimum voltage factor  $C_{min}$  has been introduced to take account of voltage variations depending on time and place, changing of transformer taps and other considerations.  $C_{min}$  has been given a value of 0.95 which for a 230 Volts gives a minimum acceptable supply of 218.5V. The earth loop impedance tables have been revised to take account of the  $C_{min}$  factor and lower supply voltages. The effect being to reduce all the maximum loop impedance values that everyone has used for many years when testing the safety of installations.

From a practical testing point of view it saves a lot of time and trouble to use a multifunction tester which has the latest maximum fault loop impedance values built-in for the different protection devices in use in UK installations. This helps to avoid potential errors from calculating the new values and saves a lot of time having to cross reference complex tables for different



devices and ratings in the wiring regulations. It also highlights the need for reliable minimum voltage checks with a TRMS tester to ensure that the supply voltages are within the  $C_{min}$  range.

Other changes include extending the use of RCDs to ensure adequate protection specifically where cables are concealed in a wall or partition (at a depth less than 50mm). Cables must be protected by a 30mA RCD for all installations if other methods of protection, including



Application note no 33

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the use of cables with either an earthed metallic covering or mechanical covering are not employed. The updated regulation will also require RCD protection for socket outlets up to 20A for all installations except for specific sockets where a documented risk assessment determines that RCD protection is not necessary and it is labelled accordingly. This exception does not include dwellings. Clearly the use of more RCDs means more RCD testing before the installation can be signed off. In this case multifunction testers with auto RCD functions which can cycle through all the required tests and display all 5 results in one go and on one screen reduce errors and speed up the job.

In addition to the changes for fixed installations in residential, commercial and industrial applications there are changes to Section 717 for mobile and transportable units typically used in catering and entertainment industries. There will be requirements to install RCDs and earthing electrodes to provide automatic disconnection in the event of failure of the transformer providing electrical separation. Interconnection of units with different power supply systems will be prohibited, as will the interconnection of different earthing systems. So once again, more RCDs and in this case more complex earthing systems that will require testing. It's not just the installation and testing that will be changing, there is also an impact on the certification forms, so now's not the time to stock up on those old certificate pads. The model forms for electrical installation certification are changing such that the number of tick boxes for the schedule of items inspected will go up from 44 to 120. There are also changes to the minor electrical installation works certificate and periodic inspection report.

We have included information on just some of the changes that will have a significant impact on the testing and certification for wiring installations next year and may help when choosing new test instruments. The full details of all the changes will not be available until the publication of the amended regulations in January together with books, training and workshops provided by the major trade associations.

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