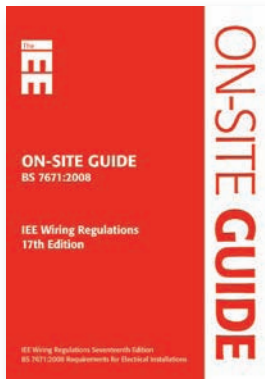


The On-Site Guide

by Mark Coles



THE ON-SITE GUIDE has been rewritten to reflect the requirements of the 17th Edition of the IEE Wiring Regulations, BS 7671:2008.

The On-Site Guide is intended to enable the competent electrician to deal with small installations up to 100 A, 3-phase. It includes simple circuit calculations and provides essential information in a convenient, easy-to-use form, avoiding the need for detailed calculations.

The Guide is restricted to installations:

- (i) at a supply frequency of 50 hertz
- (ii) at a nominal voltage of 230 V a.c. single-phase or 230/400 V a.c. three-phase
- (iii) fed through a distributor's cut-out having a fuse or fuses to BS 1361 Type II or through fuses to BS 88-2 or BS 88-6
- (iv) with a maximum value of the earth fault loop impedance outside the consumer's installation as follows:
 - TN-C-S system - 0.35 Ω
 - TN-S system - 0.8 Ω
 - TT system - 21 Ω excluding consumer's earth electrode

Content

The 17th Edition introduces a number of requirements for RCDs, such as, for socket-outlet circuits in domestic and similar installations for use by non skilled people, for circuits of locations containing a bath or shower and for cables without earthed metallic covering installed in walls or partitions at a depth of less than 50 mm and not protected by earthed steel conduit or similar, amongst others.

The On-Site Guide offers guidance on meeting these requirements by showing different permutations of RCDs, RCBOs and circuit-breakers at consumer units. Two examples are given here.

Example 1 - RCBOs

The use of RCBOs, see figure 1, will minimize inconvenience in the event of a fault and is applicable to all systems. Such a consumer unit arrangement also easily allows individual circuits, such as to specifically labelled sockets or fire alarms, to be protected by a circuit-breaker without RCD protection. Such circuits will usually need to be installed in earthed metal conduit, wired with earthed metal-sheathed cables or, in some cases, installed on the surface.

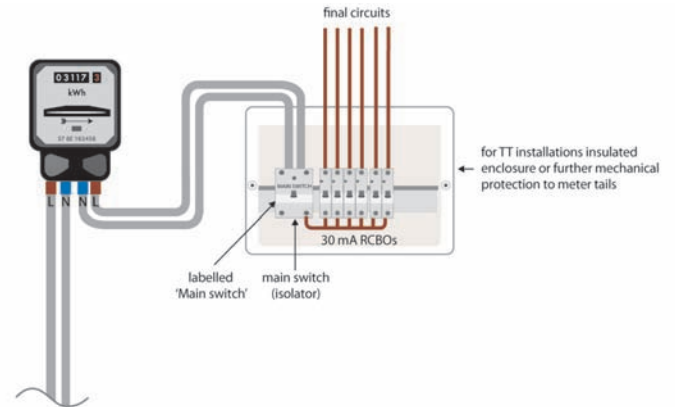


Fig 1: Consumer unit with RCBOs, suitable for all installations (TN and TT)

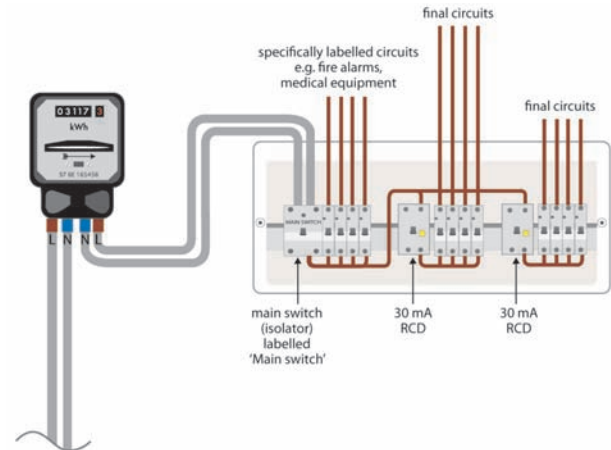


Fig 2: Three-way split consumer unit with separate main switch, two 30 mA RCDs and circuits without RCD protection

Example 2 - Three-way split board with two 30 mA RCDs

The three-way division of an installation to provide ways unprotected by RCDs for, say, fire systems and for two separate 30 mA RCDs to ensure that part of the installation will remain energised in the event of a fault. Unprotected circuits will usually need to be installed in earthed metal conduit or wired with earthed metal-sheathed cables or, in some cases, installed on the surface; see figure 2.

Further information

The On-Site Guide forms part of the suite of guidance publications issued by the IET, for which, there is a rolling programme to update and publish. The On-Site Guide is available now. ■

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