

A brief introduction to the changes in the new Wiring Regulations Amendment 2.

The first thing to talk about is the date on which they become effective.

28th of March is the introduction of the new Regs and between then and 27th September you can work under either the 1st or 2nd Amendment. Any work commenced (that is the actual installation work not the design) after 27th September must conform to the new Amendment.

1 AFDDs

One of the biggest changes is the change in Chapter 42 where AFDDs (Arc Fault Detection Devices) were 'recommended' they are *now* mandated where they might apply. Domestic properties were never mentioned and are still not required unless the designer, client or architect think there is a need.

The list of situations where they are mandated include the following:

Higher Risk Residential Buildings - these have been defined as building over 18m in height or more than 6 storey whichever occurs soonest

HMOs - no surprises here

Purpose built student accommodation - again pretty self explanatory

Care homes - again this makes perfect sense where less able bodied persons struggle to evacuate fast

AFDDs have been of concern because of their cost, but this will quickly come down once their use in the above circumstances becomes more commonplace. This means that they might be considered where they are not required such as high load circuits in domestic circuits such as cooker or shower circuits to add to safety.

Why not lighting circuits? Apparently such low currents will not normally cause an AFDD to operate.

2 Protected Escape Route

You'll remember that 'escape routes' was dropped in the 18th Edition. The explanation was that no one knew what they looked like. Take for instance an open plan office under the old 17th Edition. The desks and furniture dictate where the walk routes are. Fine until someone moves the tables and chairs around and now where is the 'escape route'? What do I do about securing the cable fixings? In the 18th Edition the support of cables such that they are unlikely to suffer premature collapse, applied to all cables everywhere at any height.

The new 'protected escape route' tells us that in addition to the above no cables are to be fitted in these locations unless they serve the vital services in the location through which they

pass. So no data or power cables in the suspended ceiling, clipped direct on the wall or in trunking or conduit in these locations unless they serve the 'protected escape route'. Relatively easy at the design stage of a new build but how about older buildings where what we have is what we have got and perhaps a 'protected escape route' is the only way of getting cables from point A to point B?

It is the responsibility of the Architect/designer/fire expert to define these 'defined escape routes'

It is assumed that cables embedded in walls are not included in this.

Smoke detectors do not constitute a safety service as they are backed up with batteries.

3 SPDs

The good news is that the old CRL calculation has gone. It was recognised as unworkable and of course the old AQ criteria has not resurfaced.

It is now a requirement to assess all new installations for overvoltages. The problem here is that with smart meters taking over there is the ability (not widely known) for DNOs to load balance the system according to demand. Couple that with load curtailment (EEMS) within installations (for EV chargers, Heat pumps etc) and there is likely to be many more load switching in the future. This in turn will cause transient overvoltages, that and the likely increase of the frequency/intensity of violent thunderstorms as the climate becomes less stable. SPDs are now to be fitted unless the client does not want them fitted and in that case a signed copy of the clients wishes should be kept for future reference.

SPDs should be fitted where the result of an overvoltage would lead to 'intolerable losses' (loss of life, significant financial or data loss).

The default position is that SPDs will be fitted on most systems unless the above case where the client does not want them, prevails.

4 Foundation Earthing

This was dropped in the new Regs, but is not going away, The recommendation is that an Earth electrode be fitted in addition to PME.

5 RCDs





There are a couple changes here, one minor and one major.

First the minor one. We will no longer be able to use type AC RCDs (RDBOs). The truth of the matter is that the Europeans have been using them for years and most suppliers stock Type A RCDs as a matter of course. You can still fit Type AC RCDs but only if there is no DC component in the load and that means only filament lighting and heating loads would qualify.

Of more concern is the complete removal of the exemption in Part 4 of RCDs where some commercial socket outlet circuits were allowed to be unprotected where a Risk Assessment was in place. The solution in many cases is that equipment that may be affected by unwanted tripping (commercial freezer units, IT server equipment, life support etc) may be permanently connected via an FCU.

The omission by Risk Assessment is still there but only in the case where sockets are used by an 'electrically skilled person'. This does not mean 'ordinary persons' who have been trained and gives clear guidance as to who they mean.

Table showing symbols used for RCD types

Type	Symbol	Operating Characteristic
AC		Operation assured for residual alternating currents, whether suddenly applied or slowly rising (for general use).
A		As for Type AC and, additionally, operation assured for: <ul style="list-style-type: none"> Residual pulsating direct currents, including those superimposed on a smooth direct current offset of up to 6 mA.
F		As for Type A and, additionally, operation assured for: <ul style="list-style-type: none"> Composite residual currents, whether suddenly applied or slowly rising between line and neutral or line and earthed middle conductor. Residual pulsating direct currents superimposed on smooth direct current of up to 10 mA.
B		As for Type F and, additionally, operation assured for: <ul style="list-style-type: none"> Residual sinusoidal alternating currents up to 1000 Hz. Residual alternating currents superimposed on a smooth direct current of up to 0.4 times the rated residual current ($I_{\Delta n}$) or 10 mA, whichever is the highest value. Residual pulsating rectified direct current which results from two or more phases. Residual smooth direct currents whether suddenly applied or slowly increased independent of polarity.

And while we are on the subject of RCDs, the tests required for them have reduced substantially. No more 1/2, 1 and 5 times tests, just a single test at 1x is required and no phase angle change. The testing of A type RCDs at more than 1x is not recommended as some testers will not pass them. The disconnection time for the 1x test remains at 300mS. The only thing to watch is on EICRs where there will be Type ACs fitted.

Incidentally, RCBOs are the preferred method of shock protection rather than split load/high integrity CUs which have never met the spirit of the regulations.

Also RCD sockets and FCUs are recognised as meeting the requirements for shock protection of sockets. My question is which type are they?

6 Bonding

There is a clarification for the bonding of substantially metallic consumers pipework where supplied from a non metallic supply pipe. The new Regs now omit the 'non metallic insert'

and replaces it with 'non metallic supply pipe'. In GN8 there is a test for bonding involving a continuity test which is now no longer required. Instead a careful inspection should be made of the metal pipework to check if any of it is 'Earthy'. The object of this is to remove 'dangerous potential difference during simultaneous contact' in other words where metallic parts are within arms reach of each other.

For further reference see the IETs 'Wiring Matters' entitled 'To bond or not to bond'.

6 Terminology

Several new terms have been introduced

Protected Escape Routes

Prosumer

EEMs - Electrical Energy Management System

DNO becomes DSO - Distribution System Operator)

V2G - Vehicle to Grid

3 types of PEI are listed:

- individual PEIs
- collective PEIs and
- shared PEI

8 Paperwork

The EIC inspection schedule handed to clients has been shortened to 14 items. The ticking of a single box indicates that all the items under that heading have been inspected. The use of the old inspection schedule is highly recommended as an aide de memoire while carrying out the inspection

This does not apply to EICRs which will still employ the full check list.

9 Labelling

It has been recognised that Consumer Units (or should that be Prosumer Units) are now liable to be covered in a confusing plethora of labels and so the labels are being replaced by a client document pack.

10 Bathroom sockets

Bathroom sockets can now be fitted if they are beyond 2.5m from Zone 1