

Electricity in your French house

Rules and techniques explained
in English

Thomas MALCOLM

© Groupe Eyrolles, 2010

ISBN : 978-2-212-12712-6

Contents

1	Introduction	7
2	Suppliers, tariffs and charges.....	9
3	EDF metering and main switchgear.....	12
4	Earthing.....	16
5	The consumer unit	20
6	Circuits	28
7	Cabling systems	34
8	Installation conventions.....	39
9	Sockets and lights.....	45
10	Bathrooms	51

11	The GTL.....	58
12	The schematic diagram.....	61
13	Television and the domestic IT network....	64
14	Inspections.....	71
	Appendix 1 – EDF Telephone Numbers for English Speaking Helplines....	75
	Appendix 2 – Glossaries.....	77



1

Introduction

Electrical systems installed in domestic premises in France vary considerably from those used in the UK. Whilst all appliances would work satisfactorily in either country, few of the materials and equipment used in the construction of UK electrical systems are acceptable in France.

Despite these differences, understanding and installing a French system is well within the capacity of anyone who is competent in the installation of UK systems.

This guide starts with the electricity supply from EDF and continues step by step through the requirements of a typical installation. The materials and equipment required are described in detail with photographs and illustrations showing their use.

Where appropriate, the guide provides an insight into the differences between the UK and French systems and highlights the reasons behind these differences. Common misunderstandings are clarified and practices that are unacceptable in France

but acceptable in the UK, and vice versa, are explained.

There is always a tendency to think that what **we** are used to is better, but the French standards are in fact very high and the approach should be one of understanding and meeting the French requirements.

Common equipment standards

Fortunately, thanks to the European Union there are some common equipment standards, such as cables and equipment carrying the CE mark. The CE mark is a construction standard for equipment.

The French national standard for equipment and installations, which also includes equipment performance, is the NF classification. This has a function equivalent to that of the BS Kitemark in the UK. In particular, the regulations relating to domestic electrical installations in France are known



as NF C 15-100. The *Norme*, as it is known, has broadly the same function and legal standing in France as do the IEE 17 regulations in the UK.

Codes of practice

To complement the regulations in the UK, various codes of practice are pub-

lished relating to specific aspects of installations. The same thing happens in France, where the source of similar information is the UTE (*Union Technique de l'Electricité*). One UTE publication in particular is referred to in the following pages. This is UTE C90-483, which deals with IT networks in domestic properties.



8

Installation conventions

Conventions that we take for granted in the UK are often not allowed in France.

UK wiring conventions

At this point, it is probably as well to point out that the flat twin and earth cable used in UK installations is not allowed in France, one of the reasons being that the earth wire is not double-insulated. Single-core cables and apparatus flexible cables used in the UK are, however, acceptable in France when installed correctly. UK consumer units and equipment such as circuit breakers and fuses found in them will not comply with French practices and must **not** be used. Ring mains, spurs and 13 amp plugs and sockets are definitely forbidden, and rewirable fuses do not exist.

A UK wiring convention that is irrelevant in France is where to put the live and neutral conductors when connecting a socket or fitting a plug. As it is a common subject of debate, an

explanation would perhaps be helpful here.

The reason why the positions of the live and neutral are important in sockets and plugs in the UK is that 13 amp plugs have fuses in them and the fuse needs to be in the live conductor to be of any use. 13 amp sockets need the live conductor to be in the correct terminal because they supply the plugs mentioned above, and sockets may be fitted with a switch that is only single-pole and must break the live conductor when operated in order to render the appliance dead.

In either of these cases, if the wiring is reversed, then operation of the switch or a short circuit blowing the 13 amp fuse will certainly switch off the appliance, but will leave it live, which is clearly not an acceptable situation.

None of this applies in France, because there are no fuses in plugs and no switches in sockets. The consumer unit protective devices are all double-pole devices that provide complete isolation when opened.



Double insulation

Although the *Norme* in both France and the UK allows the use of earthed metallic screens to offer protection against direct shock, there is undoubtedly a pronounced preference in France to use double insulation where possible. Whilst there is provision in the *Norme* for steel conduits, for example, there are many restrictions on their use, so they tend not to be used unless there is no option. Steel boxes for switches and sockets do not exist, and whilst consumer units with steel enclosures are used, they tend to figure in larger installations.

Most of the installation equipment that is on sale in the shops for domestic use is double-insulated. There is no requirement to make everything double-insulated, but if you happen to install single-core conductors in a plastic conduit, then by default you end up with a double-insulated system.

(Note

If the object is indeed to **create** a double-insulated system, then any conductive item that penetrates the outer insulation of, for example, a conduit, compromises the integrity of the double insulation. Technically, the system is no longer double-insulated. If, for example, you attach plastic trunking to the wall by nailing it (quite a common method), then you have penetrated a layer of the double insulation. For this reason, it is better not to nail it, but glue it. The integrity of the double insulation

is not now compromised.

So, in practice, the requirement is to protect conductors either with an earthed metal screen or another layer of insulation. In domestic situations, there is a clear preference for double insulation. ●

Cable colours

- **Earth conductors** - These are always green/yellow in France, as in the UK.

- **Live conductors** - These are considered to be the most important in the UK and are coloured either red or brown. In France, they are usually red, but black is an alternative, with orange and violet being used for switched live wires.

- **Neutral conductors** – These may be black (in older installations) or blue in the UK, but are considered to be the most important conductor in France and are always coloured blue.

Building voids

It is permissible to install cables and conduits in building voids (*vides de construction*). These are defined as spaces left (or made) during the construction of a building, and include such spaces as those found above false ceilings, in walls and under floors. Voids are expected to be continuous and of adequate dimensions to accommodate the required number of cables or conduits. Voids must have

a width 1.5 times the diameter of the largest cable or conduit and must not be filled to more than 25% of their available space.

Joint boxes

All joint boxes are required to be left accessible. This presents no problem if they are in a loft, but if they are behind a plasterboard wall or similar, this probably means using a flush box with the cover left visible. As not every householder sees the beauty of joint boxes on their living room walls, their positions should be chosen with care!

Socket circuit wiring

Cable runs for socket outlets can use prefilled *gaine* or proprietary composite cables, and in any case generally go from the consumer unit directly to the socket positions. However, if the need arises, it is quite normal to marshal the conductors in a joint box and make all connections with connector strip.

Lighting circuit wiring

Warning

The looping-in method of wiring lighting circuits in the UK does not exist in France and because of that neither do looping-in ceiling roses. All lighting conductors come back to one or more joint boxes with connections made by connector strips.

Note

As screw lamp holders are relatively uncommon in the UK, it should be noted that the live conductor always goes to the centre contact, as shown in Figure 24. •

Circuit additions

If practical circumstances permit, a small addition to a lighting scheme could originate directly from a new circuit breaker in the consumer unit. In this case, the cabling goes direct to the switches and light fittings, as you would expect. It may be found, however, that because of difficulties with cable routes, for example, the only option is to connect into existing circuits in an existing lighting joint box.

New installations

A new installation of any size will certainly need a joint box to marshal all the cables. This is usually done on a per floor or per defined section basis, this being the most practical method of supplying and grouping all the cables in a given area.

The practice

The two-way schematic shown in figure 24 is a fairly straightforward standard circuit; however, in practice this will look like that shown in figure 25 when put into a joint box. It should be noted that each switch and light fitting has a separate *gaine* running back to the joint box.