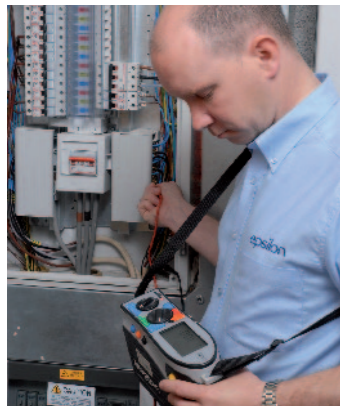


Definitions

PERIODIC FIXED INSTALLATION TESTING



Periodic Fixed Installation Testing involves testing the electrical circuits and systems that distribute electricity around a building. It covers all the hard wiring in a building, whether that building is commercial, industrial or residential. All electrical circuits in a building that are fixed, such

as lighting, socket outlets, supplies to air conditioning and other fixed plant need to be tested.



PORTABLE APPLIANCE TESTING (PAT)

Portable Appliance Testing, or PAT testing as it is often called, is the systematic checking of any equipment which has an electric plug.

This testing involves visual checks, and combined inspection and testing using a PAT test meter.

Buyer Beware

Some companies within the electrical safety testing market are selling clients a 100 per cent test and inspection deal for periodic fixed installation testing but when the small print is examined on their paperwork it transpires that this includes only **10 per cent insulation** resistance testing.

We have recommended that the standard is set at 100 per cent testing of every circuit because this is comprehensive and safe. Check any quotation carefully to make sure you are getting 100 per cent actual testing, not just inspection.

Checklist for choosing an electrical safety supplier

- Testing companies should be members of the NICEIC (The inspection council for electrical installation contractors), or the ECA (Electrical Contractors Association)
- Test engineers should all be fully employed by the supplier (not sub contractors) and qualified to City and Guilds 2377 for portable appliance testing (PAT) and 2391 for fixed wire installation
- Supplier complies with the IEE (Institute of Electrical Engineers) Codes of Practice and current Wiring Regulations to 17th Edition BS7671 : 2008 as amended and IEE guidance note 3
- For fixed installation insist on 100 per cent 'testing', not just 100 per cent 'inspection'
- Membership of accredited health and safety bodies and public liability insurance of at least £5m
- Testing company has no conflict of interest use separate companies for testing and major repair work

Reading List

Relevant legislation regarding safety in the workplace includes:

- The Health & Safety at Work Act 1974**
- The Management of Health & Safety at Work Regulations 1999**
- The Electricity at Work Regulations 1989**
- The Provision and Use of Work Equipment Regulations 1998**

Useful reading includes:

- Electrical Safety and You** published by the HSE
- IEE Guidance Note 3: Inspection & Testing** published by the IET: www.theiet.org
- Code of Practice for In-service Inspection and Testing of Electrical Equipment 3rd Edition** published by the IET: www.theiet.org

Epsilon Test Services have produced this document as a general guide only. On all occasions we recommend you contact the duly holder within your organisation before carrying out electrical works.

A guide to electrical safety in the UK

An introduction to electrical safety, including relevant legislation and tips for achieving compliance in a cost effective way.

Introduction

The legal framework that is in place to safeguard health and safety in the workplace is extensive and often complex. Understanding every aspect is an onerous task. To give a short and simple guide to one particular element, this Guide has been produced as an introduction to electrical safety. It aims to set out the essential



information for anyone responsible for electrical safety in a way that is easy to read and reference. Like any Guide, this document can only be a starting point for information. It may spark questions or prompt further investigation. As the UK's leading electrical safety specialist we are happy to provide further detail or answers to specific questions. We are standing by to help.

Mark Blanchfield,
Managing Director, Epsilon Test Services

Sobering Thoughts

At least twice as many people die from fatal injuries at work than are victims of homicide, and non-fatal workplace injuries requiring hospitalisation were also likely to be greater than those needing such treatment following the violent offences formally recorded as crimes according to a report from the Centre for Crime and Justice Studies. ('A crisis of enforcement')

Each year about 1000 accidents at work are reported involving electric shock or burns and around 30 of those are fatal, according to the Health and Safety Executive.

Electricity is the second largest cause of fires in commercial and industrial premises in the UK according to Norwich Union.

Ensuring Electrical Safety

Employers have an obligation under their Duty of Care (as stated by the Health & Safety at Work Act 1974) to take all reasonable and practicable steps to prevent danger from electrical systems, electrical equipment and conductors, which includes fixed installations and other equipment such as portable appliances (the Electricity at Work Regulations 1989).

The Regulations make no specific stipulations on examination and testing, but require all systems to be maintained to prevent danger as far as is reasonably practicable.

The HSE recommend that your first step is to assess the risk and this should be done by carrying out a risk assessment to:

- identify the hazards
- decide who might be harmed, and how
- evaluate the risks arising from the hazards and decide whether existing precautions are adequate or more should be taken

The IEE Wiring Regulations 17th Edition BS7671:2008 are non statutory but require tests and inspections of new or altered installations and recommend periodic inspection and testing.

Of this updated standard the HSE comments "Installations which conform to the standards laid down in BS7671:2008 are regarded by the HSE as likely to achieve conformity with the relevant parts of the Electricity at Work Regulations 1989."

The easiest way to entirely fulfil your obligation as a Duty Holder is to get a **qualified*** and unbiased expert to test the electrical wiring system in the building and the portable appliances within it. They will report back on any remedial work that may be recommended or required and should undertake any small corrections such as replacement of faulty or incorrectly rated fuses.

* Definition of 'competent person' (Reg 621.5): 'a person who possesses sufficient technical knowledge, relevant practical skills and experience for the nature of the electrical work undertaken and is able at all times to prevent danger and, where appropriate, injury to him/herself and others'.

Frequency of Test

Frequency of testing can be challenging to establish as there are lots of variables to consider. Inspections should be carried out at regular intervals but the period between inspections can vary considerably depending on the type of equipment, the conditions of use and on the environment.

The responsibility remains with the Duty Holder who should conduct a risk assessment to identify the potential risk and from that decide on a suitable frequency of testing.

The two definitive documents containing guidelines for recommended frequencies of test are:

For PAT: The IEE Code of Practice for In-service Inspection and Testing of Electrical Equipment, 3rd Edition

For Fixed Installations: The IEE Guidance Note 3: Inspection & Testing

We have extracted their recommendations for the most common environments here.

It is important to note that these are the maximum intervals recommended. It may be necessary to reduce period between tests due to conditions and/or environment.



Keep Covered

Ignoring electrical safety legislation could invalidate insurance. There is an expectation that the policyholder meets all legal and legislative requirements. In the event of a large claim insurers would 'consider all material facts pertaining to the loss, including any statutory obligation of the business'.

70-80 per cent of businesses fail within three years of experiencing a fire according to YouClaim.

PERIODIC FIXED INSTALLATION TEST FREQUENCIES

On new builds the initial test frequency will be set by the designer responsible for the wiring installation. Thereafter it is specified by the test engineer in line with the following guidelines:

Maximum period 5 years between inspections and testing	Commercial (or change of occupancy) Offices Shops Hospitals Educational establishments Restaurants and hotels Public Houses
Maximum period 3 years between inspections and testing	Industrial Leisure complexes (excl pools) Theatres Agricultural & horticultural

Note that for some special installations (eg swimming pools, petrol stations, caravan parks) it is recommended that the maximum period between inspections and testing is one year. Other regulations may apply such as Local Authority conditions/cinematograph (safety) regulations, etc.

PORTABLE APPLIANCE TEST (PAT) FREQUENCIES

The recommended frequency for PAT testing depends on the environment and the type of equipment. A full matrix is provided on page 34 of the IEE Code but recommendations for combined inspection and testing frequencies are summarised here:

Construction sites 110V equip	All equipment every 3 months
Industrial including commercial kitchens	S, IT & M every 12 months P & H every 6 months
Equipment used by the Public	S & IT every 12 months M, P & H Class 1 every 6 months M, P & H Class 2 every 12 months
Schools	All Class 1 equipment every 12 months All Class 2 equipment every 48 months
Hotels	Class 1 equipment: S & IT every 48 months M & P every 24 months H every 12 months
Offices and shops	Class 1 equipment: S & IT every 48 months M & P every 24 months H every 12 months

Key: S = stationary equipment, eg vending machine
IT = IT equipment, eg computer
M = moveable equipment, eg extension lead
P = portable equipment, eg fan
H = handheld equipment, eg drill