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Filters for mains signalling systems

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Committees responsible for this Draft for Development

The preparation of this Draft for Development was entrusted by the Power Electrical Engineering Standards Committee (PEL/-) to Technical Committee PEL/122, upon which the following bodies were represented:

- Association of Manufacturers of Domestic Electrical Appliances
- BEAMA Meter Association
- Beama Interactive and Mains Systems Association
- British Gas plc
- British Telecommunications plc
- Department of Energy (Electricity Division)
- Department of Health and Social Security
- Department of Trade and Industry (Consumer Safety Unit, CA Division)
- Department of Trade and Industry (Electronics Applications Division)
- Department of Trade and Industry (Radio Regulatory Division)
- ERA Technology Ltd.
- Electricity Supply Industry in England and Wales
- GAMBICA (BEAMA Ltd.)
- Institution of Electrical Engineers
- Lighting Industry Federation Ltd.

This Draft for Development, having been prepared under the direction of the Power Electrical Engineering Standards Committee, was published under the authority of the Board of BSI and comes into effect on 30 April 1987

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Foreword

This Draft for Development has been prepared under the direction of the Power Electrical Engineering Standards Committee. It is one of a series of British Standards and Drafts for Development covering mains signalling equipment and systems.

Examples of the uses of filters are:

- a) to limit the transmission of a wanted signal;
- b) to block unwanted signals;
- c) to set an impedance.

This Draft for Development specifies the characteristics considered desirable to ensure that a filter is suitable for these purposes.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature because there is little practical experience of the design of mains filters for the mains signalling frequency bands. It should be applied on this provisional basis, so that information and experience of its practical application may be obtained.

A review of this Draft for Development will be carried out not later than two years after its publication. Notification of the start of the review period, with a request for the submission of comments from users of this Draft for Development, will be made in an announcement in the appropriate issue of *BSI News*. According to the replies received, the responsible BSI committee will judge whether the Draft for Development can be converted into a British Standard or what other action should be taken.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Draft for Development specifies requirements for filters for fixed installation in conjunction with mains signalling systems, for the rejection of unwanted mains signals and interference in a.c. circuits having a rated voltage not exceeding 660 V, a rated current not exceeding 300 A and mains supply frequencies of 50 Hz to 60 Hz.

It also specifies that the impedance of the mains at signal frequencies is maintained for other mains signalling equipment.

It does not apply to general purpose filters for electromagnetic interference suppression.

This Draft for Development does not apply to filters for use in an atmosphere subject to excessive pollution by smoke, chemical fumes, salt laden spray, prolonged periods of high humidity or other abnormal conditions.

NOTE 1 For details of filters for electromagnetic interference suppression see BS 613.

NOTE 2 Portable filters or filters for use with specific pieces of equipment may be incorporated into the specification at a later date.

NOTE 3 The titles of the publications referred to in this Draft for Development are listed on the inside back cover.

2 Definitions

For the purposes of this Draft for Development, the following definitions apply.

2.1

rated current

the maximum power frequency continuous current for which the filter is declared by the manufacturer to be suitable in defined conditions

2.2

insertion loss

the ratio of the voltages, at a given frequency, appearing across the line immediately beyond the point of insertion of a filter unit into a given transmission system, before and after the insertion

2.3

live part

a conductor or conductive part intended to be energized in normal use; including a neutral conductor but, by convention, not a PEN conductor

2.4

nominal voltage (U_N)

the designated voltage of the mains supply to which the filter is intended to be fitted

2.5

rated voltage

the voltage (for three-phase supply, the voltage between phases) assigned to the filter by the manufacturer

2.6

permanent earthing

an object is said to be permanently earthed when its electrical connection to an earthed electrode is rigidly and permanently secured throughout its whole length without the intervention of any circuit interrupting device and is protected from mechanical damage and corrosion, unless by its nature and construction such protection is unnecessary

NOTE Appliances earthed through the earth conductor of a flexible cable or cord terminating in a three-pin plug are not regarded as permanently earthed.

2.7

PEN conductor

a conductor combining the functions of both protective conductor and neutral conductor

2.8

class I equipment

equipment in which the protection against electric shock does not rely on basic insulation only, but which includes an additional safety precaution in such a way that means are provided for the connection of accessible conductive parts to the protective (earthing) conductor in the fixed wiring of the installation in such a way that accessible conductive parts cannot become live in the event of a failure of the basic insulation

2.9

class II equipment

equipment in which protection against electric shock does not rely on basic insulation only, but in which additional safety precautions such as double insulation or reinforced insulation are provided, there being no protective earthing or reliance on installation conditions

3 Symbols

Letter symbols, signs, abbreviations and graphical symbols shall comply with BS 3939 or BS 5775 or BS 6217, as appropriate.

4 Marking

4.1 General

4.1.1 The filter unit shall be distinctly and durably marked with the following information:

- a) manufacturer's or responsible vendor's name, trade mark or identification;