Singapore Standards Council

TR 54 : 2016
(ICS 29.120.30; 35.020)

TECHNICAL REFERENCE

Smart plugs for homes

Published by
Enterprise Singapore

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ISBN 978-981-4726-54-2

First published, 2016

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Contents

Page

Foreword

This Technical Reference was prepared by the Working Group on the Safety of Smart Devices appointed by the Technical Committee on Electrical and Electronic Products under the direction of the Electrical and Electronic Standards Committee (EESC). The EESC endorsed the Technical Reference on 17 August 2016.

In August 2015, the Working Group was set up to evaluate the potential safety risks posed by smart plugs and identify relevant test clauses to mitigate these risks.

This Technical Reference is a provisional standard made available for application over a period of two years. The aim is to use the experience gained to update the Technical Reference so that it can be adopted as a Singapore Standard. Users of the Technical Reference are invited to provide feedback on its technical content, clarity and ease of use. Feedback can be submitted using the form provided in the Technical Reference. At the end of the two years, the Technical Reference will be reviewed, taking into account any feedback or other considerations, to further its development into a Singapore Standard if found suitable.

At this initial stage, consideration has been given to only developing requirements for public housing.

This Technical Reference is expected to be used as a reference by manufacturers/vendors/suppliers of smart plugs, consultants, licensed electrical workers, contractors, government agencies, building owners, managing agents for buildings, etc.

In preparing this Technical Reference, references were made to the following standards:

1. IEC 60950-1 Information technology equipment – Safety – Part 1: General requirements

2. IEC 61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements.

3. BS 1363-3:1995 13 A plugs, socket-outlets, adaptors and connection units. Specification for adaptors

4. Singapore Standard SS 246 Specifications for fused and unfused adaptors

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Technical Reference for smart plugs for homes

1 Scope

This Technical Reference covers specific safety and performance requirements of a smart plug which is constructed as an integral unit incorporating both a 3-pin plug portion and a shuttered socket-outlet portion with built-in functions to facilitate remote controlling or monitoring of home appliances, energy measurement, and any other optional functions. Smart plug specified in this Technical Reference is suitable for the connection of most home appliances, portable appliances, sound-vision equipment, luminaires, etc. in a.c. circuits only, operating at voltages not exceeding 250 V r.m.s. at 50 Hz for home usage.

Requirements are specified for the low voltage and extra-low voltage components and the essential tests under normal and abnormal conditions with the smart plug as an assembly for delivering a current not exceeding 10 A and at a nominal voltage of 230 V a.c. The requirements for communication protocol and security standards are also specified for compliance.

The smart plug specified in this Technical Reference is for controlling or monitoring of only one home appliance or device at any one time.

The shuttered socket contacts of the smart plug are specified for connection to a 13 A plug with pins configuration compliance to SS 145.

It is important to note that the smart plug specified in this Technical Reference is suitable for home use under the following conditions:

– The smart plug shall be connected directly to a fixed wall socket-outlet complying with SS 145 only;

– At any one time, only a single appliance or device shall be connected to the shuttered socket-outlet of the smart plug and no adaptor, portable socket-outlet or similar shall be used;

– The fixed electrical installation shall have a TT or TN-S earthing system as specified according to SS CP 5.

User shall read the operation manual accompanied with the smart plug before using the product.

To ensure safe use of smart plug for remote controlling of home appliances or monitoring purposes, users shall be adequately advised on the safety procedures, precautions and do's and don'ts to prevent hazard. However, this is outside the scope of this Technical Reference.

2 Normative references

The following referenced documents are indispensable for the application of this Technical Reference. For dated references, only the edition cited applies. For undated references, the latest edition (including any amendments) applies.

BS EN 50075	Specification for flat non-wirable two-pole plugs 2.5 A 250 V, with cord, for the connection of class II-equipment for household and similar purposes
IEC 60085	Electrical insulation – Thermal evaluation and designation