SS 702:2024
(ICS 29.120.30; 35.020)

SINGAPORE STANDARD

Specification for smart plugs for homes

Singapore Standards Council

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Foreword

This Singapore Standard was prepared by the Working Group on the Safety of Smart Devices appointed by the Technical Committee on Electrical and Electronic Products under the purview of the Electrical and Electronic Standards Committee.

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. A Technical Reference (TR) was then developed and published in 2016.

TR 54:2016, “Smart plugs for homes” was a provisional standard developed with the intent to address demand from the smart home concept. The aim was to use the experience gained from the initial trials to update the Technical Reference before elevating it to a Singapore Standard. TR 54 was reviewed and re-numbered as SS 702.

While TR 54 covers requirements specific to public housing, the scope of SS 702 has been expanded to cover private housing as well.

It is presupposed that in the course of their work, users will comply with all relevant regulatory and statutory requirements. The Singapore Standards Council and Enterprise Singapore shall not be responsible for identifying all of such legal obligations.

In preparing this Singapore Standard, reference was made to the following standards:

1. BS 1363-3:2023 13 A plugs, socket-outlets, adaptors and connection units. Part 3: Adaptors – Specification

2. IEC 60950-1:2005 Information technology equipment – Safety – Part 1: General requirements

3. IEC 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements.

4. SS 145-1:2019 Specifications for 13 A plugs, socket-outlets, adaptors and connection units – Part 1: Rewirable and non-rewireable 13 A fused plugs

5. SS 145-3:2020 Specification for 13 A plugs, socket-outlets, adaptors and connection units – Part 3: Adaptors

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2. International Electrotechnical Commission (IEC)

   - IEC 60950-1:2005 Information technology equipment – Safety – Part 1: General requirements

   - IEC 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as "mature standards". Mature standards will not be subject to further review unless there are requests to review such standards.*

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3. *Compliance with a SS or TR does not exempt users from any legal obligations.*

Specification for smart plugs for homes

1 Scope

This Singapore Standard (SS) covers specific safety and performance requirements of a smart plug that is constructed as an integral unit incorporating both a 3-pin plug portion and a shuttered socket-outlet portion. These portions come with built-in functions to facilitate remote controlling or monitoring of home appliances, energy measurement, and other optional functions. Smart plugs, as specified in this SS, are 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 in this SS.

Smart plugs specified in this SS are for remote 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 complying with SS 145-1.

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

– The smart plug is connected directly to a fixed wall socket-outlet as specified according to SS 145-2;

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

– The fixed electrical installation is a TT or TN-S earthing system as specified according to SS 638:2018.

Typically, users read the operation manual accompanied with the smart plug before using the product.

The use of the smart plug for controlling medical appliances, portable socket-outlets, cable reels, multi-way adaptors, appliances (such as electric iron or electric kettles) and similar devices, that require attention while in use, is likely to endanger safety to users. Safety instructions are included to warn users of the danger involved.

2 Normative references

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

BS 4662	Boxes for flush mounting of electrical accessories – Requirements, test methods and dimensions
BS 6004	Electric cables – PVC insulated and PVC sheathed cables for voltages up to and including 300/500 V, for electric power and lighting