

## Telecommunications equipment – Customer Premises Networks (CPNs) – Permissible lengths for lines

*Telekommunikationsutrustning – Fastighetsnät – Tillåtna ledningslängder*

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### 1 Introduction

This standard is based on specification 8211-A 216 Rev A, dated 1989-02-13, from "Televerket".

By this edition the Swedish language version of SS 63 63 48 is withdrawn and a number of references are deleted.

### 2 Scope

This standard sets forth requirements covering the lengths permitted, within and between PBX systems connected to the public switched telephone network, for unloaded 2-wire lines that are not provided with amplifiers. Unloaded 4-wire system set lines that are not provided with amplifiers are also included. These requirements apply only to lines that can be included in external connections. No requirements are imposed for any lines that are to be used only for signalling or to supply power.

### 3 References

The following standards contain requirements which through reference constitute requirements of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

- SS 63 63 26 Telecommunications equipment – Private Branch Exchanges (PBXs) – Signalling requirements in interface toward extension line
- SS 63 63 29 Telecommunications equipment – Private Branch Exchanges (PBXs) – Transmission requirements for digital interfaces

### 4 General

The permissible line lengths set forth in this document are expressed in the form of permissible line resistances.

**Note:** Line characteristic requirements are set forth in standard SS 63 63 50.

### 5 Extension lines to approved plug-in equipment

#### 5.1 General

This clause refers to extension lines in PBX connected to the public switched telephone network in which the extension line is connected to the PBX via an interface that complies with standard SS 63 63 26.

Other types of extensions in PBXs connected to the public switched telephone network are considered here as extensions provided with system sets. See clause 6.

#### 5.2 Maximum line lengths

The maximum resistance for an extension line running to approved plug-in equipment shall be equal to the **lower** of the following:

- a) The maximum resistance that, as set forth in clause 5.2.1, is permitted for the type of extension line in question.
- b) The maximum resistance of an extension line which is set forth in clause 5.2.2 with regard to the location of the PBX in the telephone network and the way it is connected to the network.

##### 5.2.1 PBX-type dependent maximum resistances for extension lines

The PBX-type dependent maximum resistance for an extension line shall be the line resistance that has been approved as per standard SS 63 63 26 for the extension interface in question.

##### 5.2.2 Network-dependent maximum resistance for extension lines

The network-dependent maximum resistance for the extension line shall be determined as per clauses 5.2.2.1 and 5.2.2.2.

###### 5.2.2.1 Digitally connected digital PBXs

This refers to digital PBXs that are connected to digital telephone exchanges in the public switched telephone network solely via digital exchange lines.

For PBXs in such systems, the network-dependent maximum resistance for extension lines shall be 1000 ohms.

### 5.2.2.2 *Analogue connected analogue or digital PBXs*

This clause refers to analogue or digital PBXs which are connected to the public switched telephone network via analogue exchange lines (to an analogue or a digital telephone exchange) or via digital exchange lines to an analogue telephone exchange.

For PBXs in such systems, the network-dependent maximum resistance for extension lines shall be 100 ohms.

Depending on local conditions in the part of the public switched telephone network where the PBX is connected, it may also be possible to use a maximum line resistance higher than 100 ohms for a PBX having analogue exchange lines. However, the resistance shall not exceed 1000 ohms. On request, the Swedish Telecom will conduct an investigation to see whether or not this is possible.

## 6 System set lines

### 6.1 General

The requirements set forth in this clause are for lines that are:

- Used for extensions in PBXs that are connected to the public switched telephone network.
- Not intended for approved plug-in equipment as per clause 5.1.

### 6.2 Maximum line lengths

The maximum resistance for an **analogue** system set line shall be equal to the **lower** of the following:

- a) The maximum resistance that, as set forth in clause 6.2.1, is permitted for the type of system set line in question.
- b) The maximum resistance of a system set line which is set forth in clause 6.2.2 with regard to the location of the PBX in the telephone network and the way it is connected to the network.

This means either the resistance in an analogue 2-wire system set line or the resistance in each voice frequency pair for an analogue 4-wire system set line.

The maximum resistance for a **digital** system set line, shall equal the PBX-dependent resistance set forth in clause 6.2.1.

#### 6.2.1 ***PBX-type dependent maximum resistances for system set lines***

The PBX-type dependent maximum resistance for system set lines is the line resistance for which the type of system set in question has been approved.

**Note:** Other length limiting values may exist for any wires used to carry separate signals or to supply power.

#### 6.2.2 ***Network-dependent maximum resistances for analogue system set lines***

The network-dependent maximum resistance for analogue system set lines shall be determined as per clauses 6.2.2.1 and 6.2.2.2.

##### 6.2.2.1 *Digitally connected digital PBXs*

This refers to digital PBXs that are connected to digital telephone exchanges in the public switched telephone network solely via digital exchange lines.

For PBXs in such systems, the network-dependent maximum resistance for system set lines shall be 1000 ohms.

### **6.2.2.2** *Analogue connected analogue or digital PBXs*

This clause refers to analogue or digital PBXs which are connected to the public switched telephone network via analogue exchange lines (to an analogue or a digital telephone exchange) or via digital exchange lines to an analogue telephone exchange.

For PBXs in such systems, the network-dependent maximum resistance for system set lines shall be 600 ohms.

Depending on local conditions in the part of the public switched telephone network where the PBX is connected, it may also be possible to use a maximum line resistance higher than 600 ohms for a PBX having analogue exchange lines (to an analogue or a digital telephone exchange) or digital exchange lines to an analogue telephone exchange. However, the resistance shall not exceed 1000 ohms. On request, Swedish Telecom will conduct an investigation to see whether or not this is possible.

## **7 Lines between Swedish Telecom's handover points and PBXs**

### **7.1 Digitally connected digital PBXs**

See standard SS 63 63 29, clause 5.1.2.

### **7.2 Analogue connected analogue or digital PBXs**

For the part of an exchange line that runs between the Swedish Telecom's handover point and a PBX, the maximum network-dependent line resistance shall be 25 ohms. On request, Swedish Telecom will conduct an investigation to see whether or not a higher resistance can be permitted.

## **8 Lines between PBXs in a PBX network (tie lines)**

On request, Swedish Telecom will conduct an investigation to determine the permissible resistance of a tie line that can be included in an external connection. However, a resistance of 500 ohms is permitted, without an investigation, if external traffic via the tie line is only forwarded between a digital PBX which, via only digital exchange lines, is connected to a digital telephone exchange in the public switched telephone network, and extensions of a PBX (analogue or digital) which

- does not include an extension line with a resistance higher than 100 ohms;
- does not include a system set line with a resistance higher than 600 ohms;
- does not include an extension or system set line wholly or partly leased from Swedish Telecom.