

Analogue PSTN terminal support interface

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- British Approvals Board for Telecommunications
- British Association of the Hard of Hearing
- British Micro Computer Manufacturers Group (BMMG)
- British Telecommunications plc
- Cable & Wireless Communications plc
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- Communications Workers Union
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- Co-opted Members
- Department of Trade & Industry, Communications Information Industries Directorate
- Federation of the Electronics Industry
- Kingston Communications (Hull) plc
- OFTEL (Office of Telecommunications)
- Society of Cable Telecommunication Engineers
- Telecommunications Industry Association
- Telecommunications Users Association (TUA)

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Foreword

This British Standard has been prepared by Technical Committee TCT/2, Analogue telecommunications networks, under the direction of the Telecommunications Assembly.

Annex A is normative. Annex B and annex C are informative.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations. In particular, attention is drawn to the Telecommunications Act 1984 [1].

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 22, an inside back cover and a back cover.

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Introduction

This standard was prepared in response to the need of the telecommunications industry for an apparatus which is intended to interwork with approved terminal equipment by simulating a typical PSTN interface.

The requirements in this standard are intended to allow the creation of a terminal support interface as might be incorporated in a discrete item of terminal equipment; they are not intended as a substitute for the published network characterizations of the actual PSTNs provided by UK Public Network Operators

The requirements in this standard are not intended to be used for regulatory purposes.

Reasons for the inclusion of each requirement defined in the main body of this standard are given in annex B.

Apparatus covered by this standard may additionally provide other types of port to which other standards apply.

1 Scope

This British Standard is applicable to apparatus incorporating an interface for the connection of terminal equipment intended for connection to a single 2-wire analogue line interface of the PSTN (known commonly as a Direct Exchange Line, and using loop calling, loop clearing) and specifies the performance requirements of the interface so as to make it appear to the attached terminal equipment that is inter-working with a single 2-wire analogue interface of the PSTN.

NOTE 1 A single 2-wire analogue interface of the PSTN is one which does not use the commonly provided PBX signalling protocols of either loop calling-guarded clearing, loop calling-disconnect clearing, or earth calling.

This standard is applicable to apparatus where the loop current provided to the terminal equipment is not directly derived from a PSTN connection and includes apparatus where the internal connection between the terminal support interface and the NCP uses radio communication means such as CT2 and PCN.

This standard is applicable to apparatus where any terminal equipment connected to the terminal support interface is connected via a cable with a maximum loop resistance of 100 Ω .

NOTE 2 Cable with a loop resistance of 100 Ω is equivalent to approximately 500 m of cable with 0.5 mm diameter copper conductors.

The electrical conditions specified for the apparatus at the terminal support interface are sufficient to ensure satisfactory operation of some or all of the following functions of approved terminal equipment:

- a) call control;
- b) transmission;
- c) signalling;
- d) ringing.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 6312-1:1994, *Connectors for analogue telecommunications interface — Part 1: Specification for plugs*.

BS 6305:1992, *Specification for general requirements for apparatus for connection to public switched telephone networks run by certain public telecommunications operators*.

ITU-T Recommendation P.53, *Psophometer (apparatus for the objective measurement of circuit noise)*¹⁾.

3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply.

3.1 Abbreviated terms

ALASS	analogue local access signalling services
NOTE	For information on ALASS see annex C.
CAI	common air interface
CT2	second generation cordless telephone
DTMF	dual tone multi frequency
LD	loop disconnect
NCP	network connection point
NTP	network termination point
PCN	personal communication network
PSTN	public switched telephone network
PTRP	port test reference point
TE	terminal equipment
TSI	terminal support interface

¹⁾ Geneva: International Telecommunication Union: International Telegraph and Telephone Consultative Committee (CCITT), 1988 Blue Book.

3.2 Definitions

3.2.1

2-wire apparatus

apparatus which when providing a transmission path between the interface port and the network connection point uses the same path for each direction of transmission

3.2.2

4-wire apparatus

apparatus which when providing a transmission path between the interface port and the network connection point uses separate paths for each direction of transmission

3.2.3

answer signal

indication that a terminal wishes to answer an incoming call

3.2.4

apparatus type

classification dependent on the apparatus internal transmission path and network connection

NOTE Types are defined in Table 1.

3.2.5

clear signal

indication that a terminal or the network is attempting to release a connection

3.2.6

dBV

the absolute voltage expressed as dB relative to 1 V

3.2.7

dBm0

the absolute power level in dB referred to a point of zero level

3.2.8

dBm0p

the absolute psophometric power level in dB referred to a point of zero level

3.2.9

dBmp

the absolute psophometric power level expressed as dB relative to 1 mW

3.2.10

disconnect signal

break of duration 90 ms to 110 ms in the loop current presented at the TSI by the apparatus in response to an end-of-call signal received at the NCP

3.2.11

end-of-call signal

signal usually provided at the called analogue NTP by the network to indicate when a calling TE has resumed the quiescent state

NOTE 1 The signal consists of a reduction in the PSTN loop current to below 1 mA for a period normally in the range 90 ms to 130 ms. There are some NTPs in existence which provide break periods in the range 20 ms to 128 ms, but 90 ms to 110 ms is the preferred range for new installations.

NOTE 2 This signal is also known as a K-break.

3.2.12

off-line signalling state

optional electrical state into which terminal equipment (TE), when connected to the network, is placed such that it is capable of sending or receiving speechband signalling without entering the on-line transmission state

3.2.13

mean one-way transmission time

half the sum of the one-way transmission times in both directions of transmission between the interface port and the network connection point

3.2.14

network connection point

point provided by the apparatus intended for connection to a network termination point

3.2.15

network termination point

point where the local subscriber line is terminated, the PSTN standard interface is presented and the TE is connected

3.2.16

off-line idle state

condition of the apparatus where it has no seize signal applied at the terminal support interface, it has applied a release condition at the NTP and where no transmission path is provided between the NCP and the interface

3.2.17

on-line signalling state

condition of the apparatus where it has a seize signal applied at the interface, it has applied a seize signal to the NTP and is capable of transmitting to the NTP any network address signalling applied at the interface

3.2.18

on-line transmission state

condition of the apparatus where it has a seize signal applied at the interface, it has applied a seize signal to the NTP, and where it provides a voice band transmission path between the NCP and the interface

3.2.19

port test reference point (PTRP)

point on the transmission path of 4-wire apparatus to and from which the various transmission parameters may be summed to give the overall transmission performance

NOTE 1 For apparatus employing radio transmission means for the transmission path, the PTRP is assumed to be at the appropriate common air interface (CAI).

3.2.20

seize signal

indication that a terminal is attempting to establish a connection



3.2.21**supplier's declaration**

a declaration based upon evidence held by the supplier that the relevant requirements are met. Such evidence shall consist of actual test information or other substantiating material relating to the design of the apparatus

3.2.22**terminal support interface**

port provided by the apparatus for connection of terminal equipment intended for connection to the analogue PSTN, and which supports certain terminal equipment functions

3.2.23**transparent signalling**

facility whereby network address information and supervisory signals are conveyed between the terminal support interface and the PSTN connection point without regeneration within the apparatus

4 Physical connection requirements**4.1 Terminal support interface****4.1.1 Mechanical requirements**

The analogue terminal support interface (TSI) shall be presented at a socket compatible with a plug conforming to BS 6312-1.

Conformity shall be checked by inspection.

NOTE Details of a suitable connector are given in BS 6312-2-1.

4.1.2 Connection arrangements**4.1.2.1 Loop presentation**

Connections equivalent to the A- and B- wires of the 2-wire analogue PSTN connection shall be presented at terminals 2 and 5 of the TSI.

Conformity is checked by the test of clause 6.

4.1.2.2 Shunt connection

A capacitor of $1.80 \mu\text{F} \pm 0.18 \mu\text{F}$ shall be connected between terminals 4 and 5 of the TSI socket.

Conformity shall be checked by measurement.

4.2 Network connections

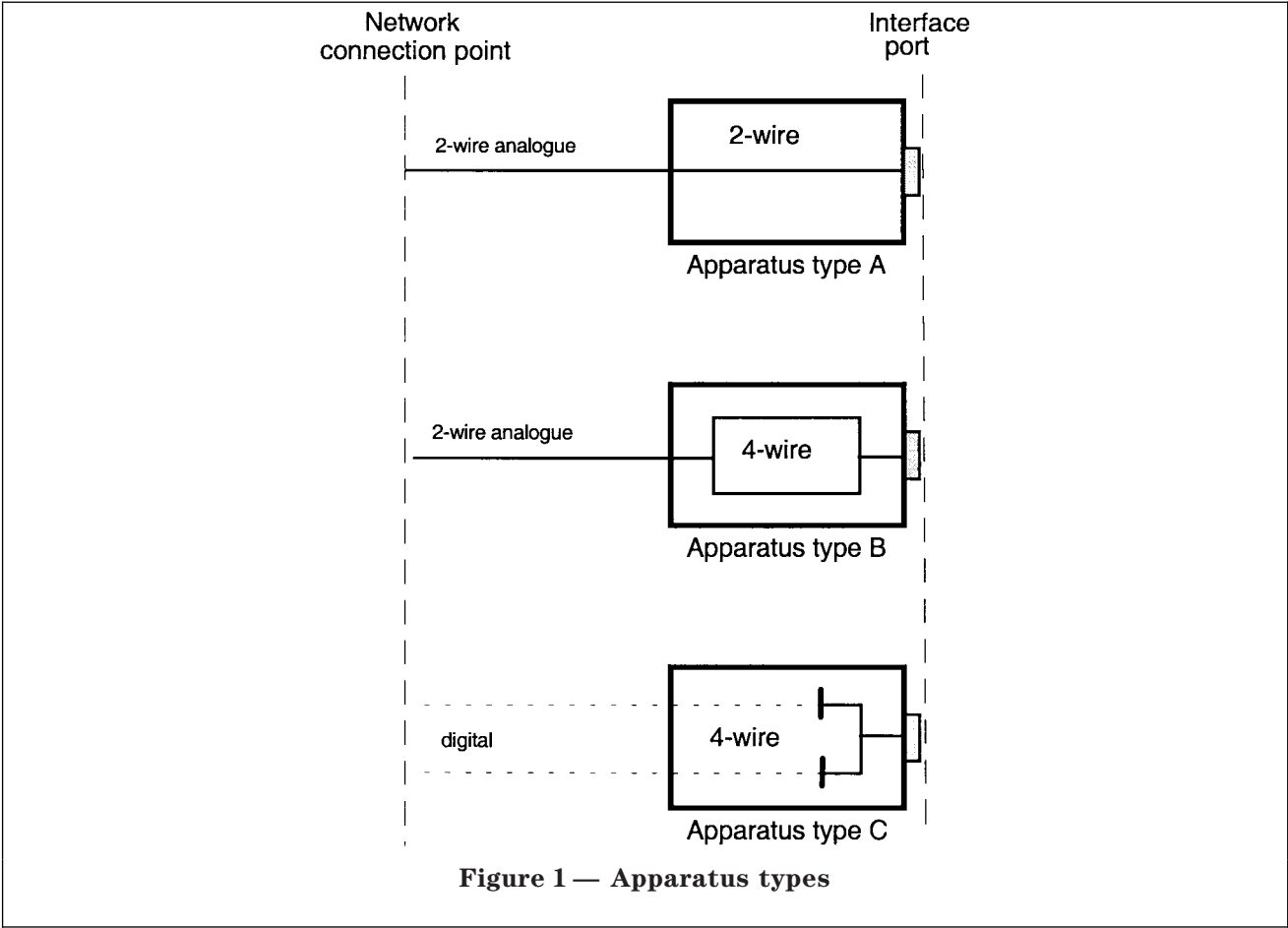
The supplier shall declare which type of apparatus, in accordance with Table 1 and shown in Figure 1, is provided.

Conformity shall be checked by reference to the information provided by the supplier in accordance with clause 14.

Table 1 — Apparatus types

Apparatus type	Apparatus internal transmission path	Network connection
A	2-wire	2-wire analogue
B	4-wire ^a	2-wire analogue
C	4-wire	4-wire digital
^a The internal 4-wire transmission path may be analogue or digital.		

NOTE The possible states of the apparatus, and the transitions between states are shown in Figure 2. An example of a PTRP is shown in Figure 3.



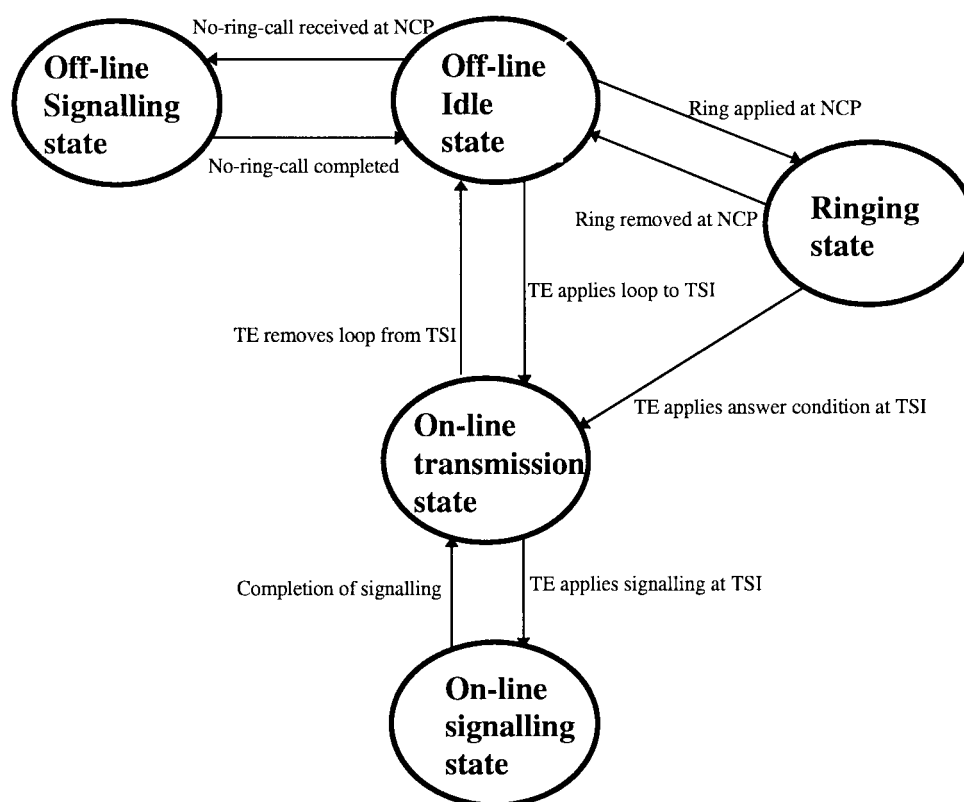


Figure 2 — Apparatus state transition diagram

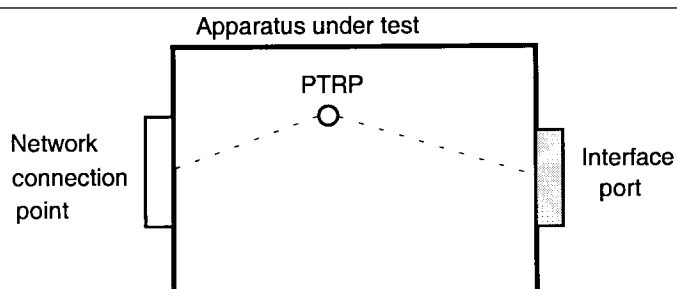


Figure 3 — PTRP example

5 D.C. feed conditions

5.1 Loop current, on-line state

When a resistor with a value in the range $0\ \Omega$ to $460\ \Omega$ is connected between terminals 2 and 5 of the TSI, a d.c. current within the range $(32 \pm 7)\text{ mA}$ shall flow.

Conformity shall be determined by the test of **A.5.1**.

5.2 Voltage

5.2.1 Polarity

The polarity of the d.c. voltage presented at the TSI during the on-line and off-line idle states shall be such that terminal 5 (the B-wire) is normally negative with respect to terminal 2 (the A-wire).

Conformity shall be determined by the test of **A.5.2.1**.