

International Standard



7480

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Information processing — Start-stop transmission signal quality at DTE/DCE interfaces

Traitement de l'information — Qualité des signaux de transmission arythmique aux interfaces ETTD/ETCD

First edition — 1984-10-01

UDC 621.327.8 : 621.391.8

Ref. No. ISO 7480-1984 (E)

Descriptors : data processing, data transmission, start-stop transmission, signals, quality, data terminal equipment, data circuit terminations, definitions, signal generators, tests, electrical tests, specifications.



Documents

Document Sharing Hub

Price based on 10 pages

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7480 was prepared by Technical Committee ISO/TC 97, *Information processing systems*.

Information processing — Start-stop transmission signal quality at DTE/DCE interfaces

1 Scope and field of application

1.1 This International Standard provides a guide for signal quality requirements for serial data transmission at the interface between start-stop transmission Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE). The interface referred to in this International Standard conforms to CCITT Recommendations V.24 (telephone networks), X.24 (data networks) and the transmitting/receiving equipment to CCITT Recommendations V.21, V.22, V.22 bis, V.23, V.26 ter, X.20, X.20 bis together with V.28, or X.20 together with X.26 (= V.10) and/or X.27 (= V.11).

The signal quality requirement is limited to start-stop transmission at the interface with asynchronous DCEs or synchronous DCEs such as CCITT type V.22. Signal quality pertaining to synchronous DTEs is not part of this International Standard.

1.2 This International Standard recognizes the need to have a number of different performance categories of signal quality depending on the type of timing used. Two types of timing are distinguished, electronic timing and mechanical timing, and the appropriate characteristics are indicated in the table.

Four signal quality categories are defined for transmitting DTEs. The categories I and II have been chosen to cover equipment using all electronic signal generation. Category II is for the attachment of start-stop transmitting DTEs to synchronous DCEs. Categories P1 and P2 are provided for DTEs using mechanical timing. Complementary categories for receiving DTEs are shown under the headings A, B, PA and PB.

The signal quality characteristics apply to data circuits regardless of whether or not multiplexing equipment is included. They do not apply to tandem data circuits where no signal regeneration is provided between interconnected sections.

A number of signal quality categories, therefore, are defined for transmitting equipment and for receiving equipment, the intention being that any receiving equipment may operate with any transmitting equipment, the actual selection being dependent

upon such factors as channel characteristics, and economic considerations of the data communication system.

1.3 This International Standard is of particular importance when the transmitting or receiving equipment are furnished by different organizations. It does not attempt to indicate what action, if any, is to be taken if the limits are not met, but it is intended to provide a basis for agreement between parties involved.

1.4 This International Standard does not describe the signal quality of the DCE or the line associated with it. Neither does it describe any requirement for an acceptable bit error rate.

2 References

ISO 2382/9, *Data processing — Vocabulary — Part 09 — Data communication*.

CCITT Definitions, *Green Book*, Vol. VIII, 1972.

CCITT V and X-series recommendations, *Yellow Book*, Vol. VIII, 1981.

CCITT Recommendation V.10, *Electrical characteristics for unbalanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications*.

CCITT Recommendation V.11, *Electrical characteristics for balanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications*.

CCITT Recommendation V.21, *300 bits per second duplex modem standardized for use in the general switched telephone network*.

CCITT Recommendation V.22, *1 200 bits per second duplex modem standardized for use on the general switched telephone network and on leased circuits*.

CCITT Recommendation V.22 bis, *2 400 bits per second duplex modem using the frequency division technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits.*

CCITT Recommendation V.23, *600/1 200 baud modem standardized for use in the general switched telephone network.*

CCITT Recommendation V.24, *List of definitions for interchange circuits between data terminal equipment and data circuit-terminating equipment.*

CCITT Recommendation V.26 ter, *2 400 bits per second duplex modem using the echo cancellation technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits.*

CCITT Recommendation V.28, *Electrical characteristics for unbalanced double-current interchange circuits.*

CCITT Recommendation X.20, *Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for start-stop transmission services on public data networks.*

CCITT Recommendation X.20 bis, *V.21-compatible interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for start-stop transmission services on public data networks.*

CCITT Recommendation X.24, *List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) on public data networks.*

3 Definitions

For the purpose of this International Standard, the following definitions apply:

3.1 electronic timing : A signal which serves to determine the duration of signal elements and to achieve synchronization within a transmission system; it is derived from a suitable electronic circuit such as an oscillator or delay line.

3.2 mechanical timing : A signal which serves to determine the duration of signal elements and to achieve synchronization within a transmission system; it is generally derived from the angular velocity of an electric motor (power line frequency used as timing source is also included in this category).

3.3 start-stop system : Data transmission system in which each signal representing a character is preceded by a start signal which serves to prepare the receiving device for the reception of a character signal and registration of a character, and is followed by a stop signal which serves to prepare the receiving device for the reception of a subsequent start signal.

3.4 start-stop transmission (see ISO 2382/9): Asynchronous transmission such that each group of signals representing a character is preceded by a start signal and is followed by a stop signal.

3.5 continuous start-stop operation : Method of operation in start-stop transmission in which the signals representing a series of characters follow one another contiguously (for example, in sending steadily from a perforated paper tape as compared to manual keyboard operation).

3.6 signal element (ITU 52.04)¹⁾ : Each of the parts constituting a telegraph or data signal and distinguished from the others by its nature, magnitude, duration and relative position (or by one or some of these features only).

3.7 unit interval (UI) (ITU 31.26) : In a system using an equal length code, or in a system using an isochronous modulation, the interval of time such that the theoretical durations of the significant intervals of a telegraph modulation (or restitution) are whole multiples of this interval.

3.8 modulation rate (ITU 31.27) : Reciprocal of the unit interval measured in seconds. This rate is expressed in baud.

3.9 baud (ITU 31.28) : The unit of modulation rate. It corresponds to a rate of one unit interval per second.

Example:

If the duration of the unit is 20 ms, the modulation rate is 50 baud.

3.10 character interval : The duration of a character expressed as the total number of unit intervals (including information and parity check) plus the start and stop signals.

3.11 start signal (see ISO 2382/9: In start-stop transmission, a signal at the beginning of a character that prepares the receiving device for the reception of the code elements.

NOTE — A start signal is limited to one signal element generally having the duration of a unit interval.

3.12 start transition : In a character transmitted in a start-stop system, the mark-to-space transition at the beginning of the start signal.

NOTE — For mark, space, see ITU 31.37.

3.13 stop signal (see ISO 2382/9): In start-stop transmission, a signal at the end of a character that prepares the receiving device for the reception of a subsequent character.

NOTE — A stop signal is usually limited to one signal element having any duration equal to or greater than a specified minimum value.

¹⁾ ITU — International Telecommunication Union.