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# International Standard



# 4903

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## Data communication — 15-pin DTE/DCE interface connector and pin assignments

*Téléinformatique — Affectation des broches et description du connecteur 15 broches à la jonction entre ETTD et ETCD*

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## Foreword

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International Standard ISO 4903 was developed by Technical Committee ISO/TC 97, *Computers and information processing*, and was circulated to the member bodies in February 1979.

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The member body of the following country expressed disapproval of the document on technical grounds:

USSR

# Data communication — 15-pin DTE/DCE interface connector and pin assignments

## 1 Scope and field of application

This International Standard specifies the 15-pin connector and the assignment of connector pin numbers at the interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) where CCITT<sup>1)</sup> Recommendations X.24, X.26, and X.27 are applicable.

## 2 References

ISO 2110, *Data communication — 25-pin DTE/DCE interface connector and pin assignments.*

ISO 4902, *Data communication — 37-pin and 9-pin DTE/DCE interface connectors and pin assignments.*

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 (PDN).*

CCITT Recommendation X.21, *General purpose interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for synchronous operation on public data networks (PDN).*

CCITT Recommendation X.22, *Multiplex DTE/DCE interface for user classes 3-6.*

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 (PDN).*

CCITT Recommendation X.26 (or 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 X.27 (or V.11), *Electrical character-*

*istics for balanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications.*

## 3 Connector

Figures 1 to 7 illustrate the 15-pin interface connector. Only those dimensions that are essential to mating are shown. Figure 1 illustrates the DTE interface connector which has 15 male contacts and a female shell. Figure 2 illustrates the DCE interface connector which has 15 female contacts and a male shell. Contact numbering is specified in figures 1 and 2. The DCE interface connector shall be equipped with the two latching blocks as specified in figure 2. The DTE interface connector shall be equipped with means for latching to these blocks. The means for latching the DTE connector to the blocks on the DCE connector is subject to national regulations. The means for latching, however, is to be accomplished within the shaded space shown in figure 3. The means for latching shall be such that the connectors can be latched and disconnected within the access space available for both of the arrangements illustrated in figure 4. This will permit DCE interface connectors to be mounted with the clearances shown for either of the two arrangements of figure 4. Figure 5 illustrates the dimensions for the pin layout. Figures 6 and 7 illustrate the dimensions for the pin and mating socket respectively.

The specification for the connector in this International Standard is provided for mechanical compatibility only. It is also intended to be mechanically compatible with the detailed connector specification currently being developed by the IEC.

## 4 Assignment of pin numbers

The pin assignments for the interchange circuits specified in CCITT Recommendations X.20, X.21 and X.22 are given in table 1 for implementations using X.26 and X.27 electrical characteristics. Additionally, pin 1 is reserved for connection of the shield of shielded interconnecting cable. The list of interchange circuits is given in table 2. Their provision and use must be in conformity with corresponding CCITT DCE Recommendations.

1) International Telegraph and Telephone Consultative Committee.

### 5 Interconnecting configurations for mixed use of X.26, X.27 and V.28 electrical characteristics

Considerations for interworking of equipment implementing X.26 on one side of the interface with equipment implementing X.27 on the other side of the interface are given in annex 2 of CCITT Recommendations X.26 and X.27. Guidance concerning specific interconnecting configurations applicable to the X.20 and X.21 interfaces is provided in annex A.

Guidance concerning adaptation necessary when there is a need for X.20 DCE implementing X.26 characteristics to interwork with X.20 DTE implementing V.28 characteristics is given in annex B. Any adapters required to accomplish the interworking with V.28 equipment shall be provided with the equipment meeting the requirements of this International Standard, i.e., the X.20/X.26 DCE. No revisions or modifications shall be required in the equipment using V.28 electrical characteristics.

NOTE — Annexes A and B are not an integral part of this International Standard.

Table 1 — Pin assignments for interface CCITT Recommendations X.20, X.21, and X.22

Pin number <sup>6)</sup>	Interchange circuit assignment				
	X.20 <sup>2)</sup>		X.21 <sup>3)</sup>		X.22
	X.26	X.27 <sup>5)</sup>	X.26 <sup>4)</sup> 5)	X.27 <sup>5)</sup>	X.27 <sup>5)</sup>
1	See note 1	See note 1	See note 1	See note 1	See note 1
2	T	T(A)	T	T(A)	T(A)
3	—	—	C	C(A)	C(A)
4	R	R(A)	R(A)	R(A)	R(A)
5	—	—	I(A)	I(A)	I(A)
6	—	—	S(A)	S(A)	S(A)
7	—	—	B(A)	B(A)	F(A)
8	G	G	G	G	G
9	Ga	T(B)	Ga	T(B)	T(B)
10	—	—	Ga	C(B)	C(B)
11	Gb	R(B)	R(B)	R(B)	R(B)
12	—	—	I(B)	I(B)	I(B)
13	—	—	S(B)	S(B)	S(B)
14	—	—	B(B)	B(B)	F(B)
15	Reserved for future international use				

### NOTES

1 Pin 1 is assigned for connecting the shields between tandem sections of shielded interface cable. The shield may be connected either to protective ground or to signal ground at either the DTE or DCE or both in accordance with national regulations.

Signal ground may be further connected to protective ground in accordance with national safety regulations. Caution should be exercised to prevent establishment of ground loops carrying high currents.

2 DTEs may employ either X.26 or X.27 electrical characteristics to operate with DCEs using X.26 electrical characteristics in accordance with X.20.

3 DTEs may employ either X.26 or X.27 electrical characteristics to operate with DCEs using X.27 electrical characteristics in accordance with X.21 for data signalling rates of 9,6 kbit/s and below. Only X.27 applies above 9,6 kbit/s.

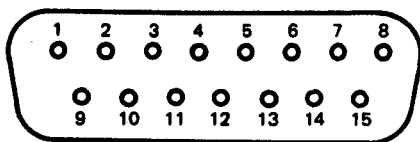
4 The pin assignments and circuit designations have been chosen considering interworking between X.26 DTE and X.27 DCE using the considerations given in annex 2 of Recommendations X.26 and X.27.

5 Where balanced circuits are concerned, the associated pairs are designated "A" and "B" in X.27.

6 The pin assignments have been aligned to specify pairing and connection to multipaired interconnecting cable. Respective paired pins are 2 and 9, 3 and 10, ..., 8 and 15.

Table 2 — List of interchange circuits

Circuit designation	Description
G	Signal ground or common return
Ga	DTE common return
Gb	DCE common return
T	Transmit
R	Receive
C	Control
I	Indication
S	Signal element timing
B	Byte timing
F	Frame start identification



DTE connector face  
contact numbering

Dimensions in millimetres

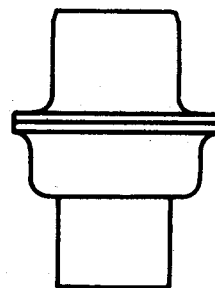
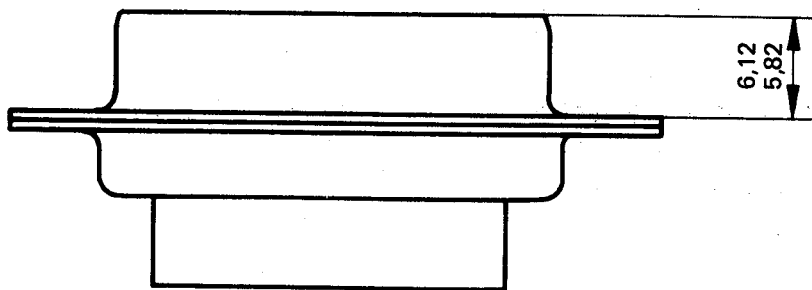
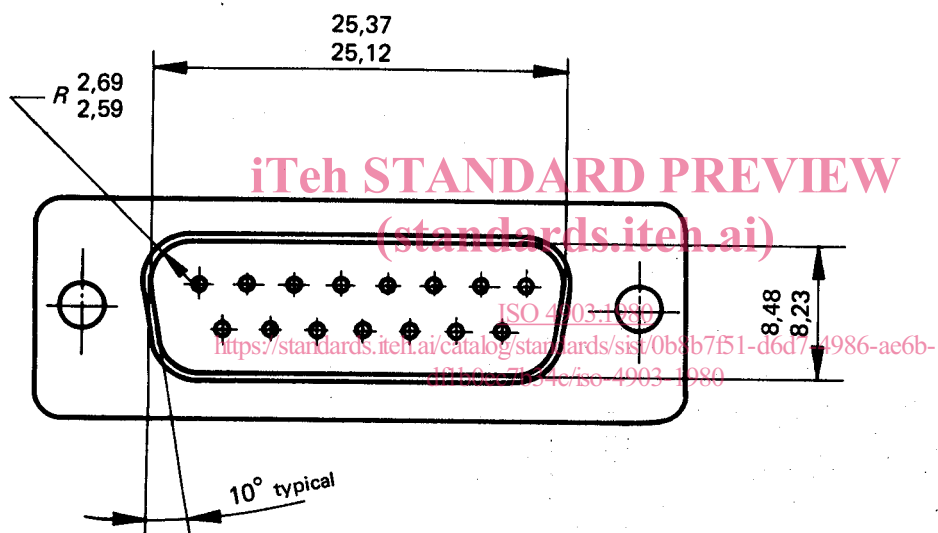
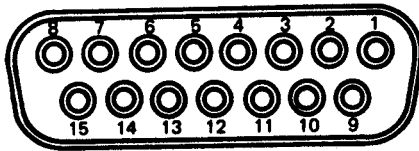


Figure 1 – DTE interface connector

Dimensions in millimetres



DCE connector face contact numbering

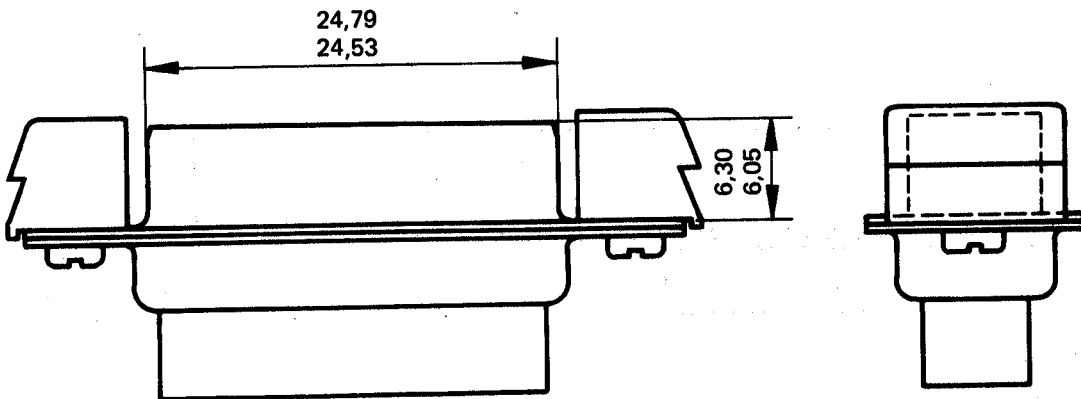
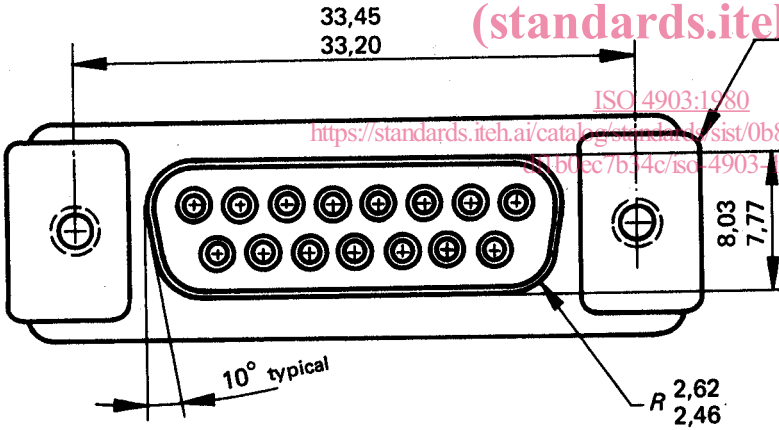
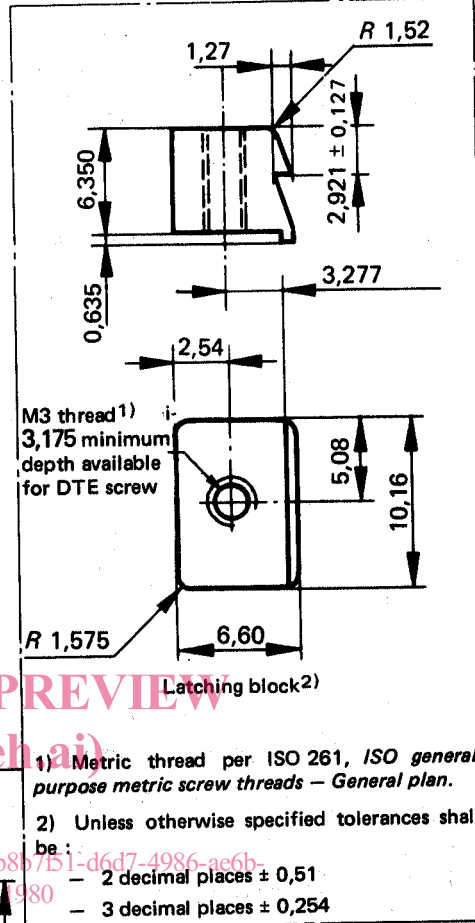


Figure 2 – DCE interface connector

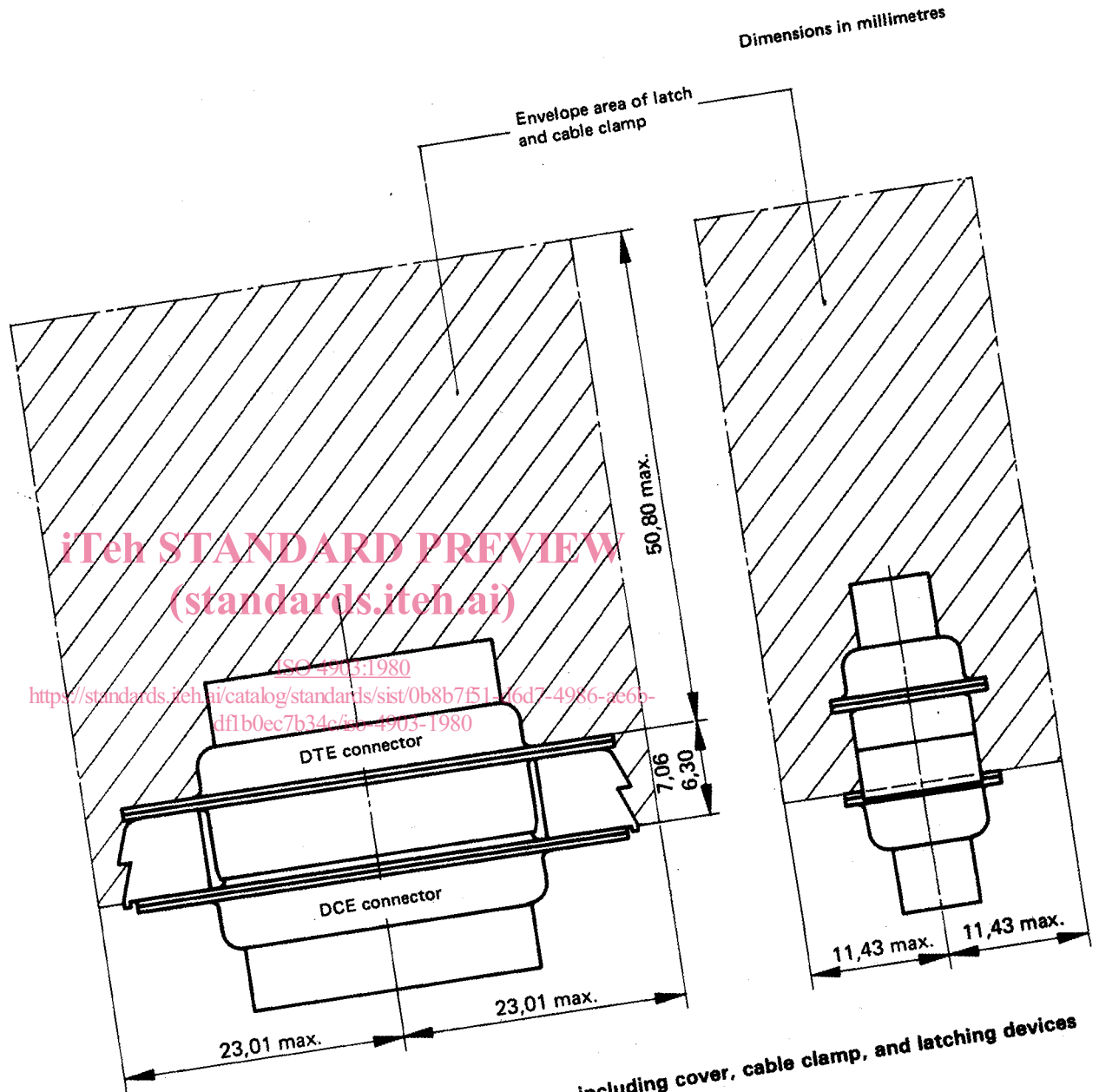
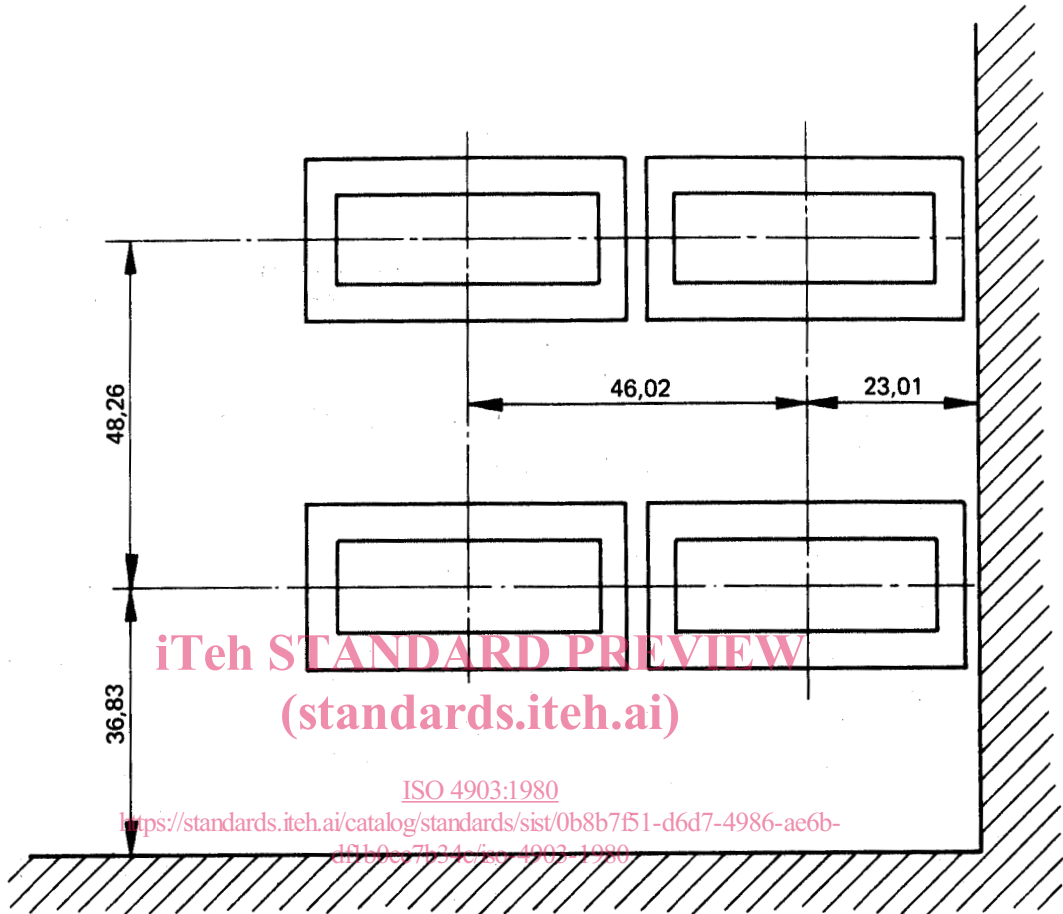


Figure 3 — Maximum size of DTE connector including cover, cable clamp, and latching devices

Dimensions in millimetres

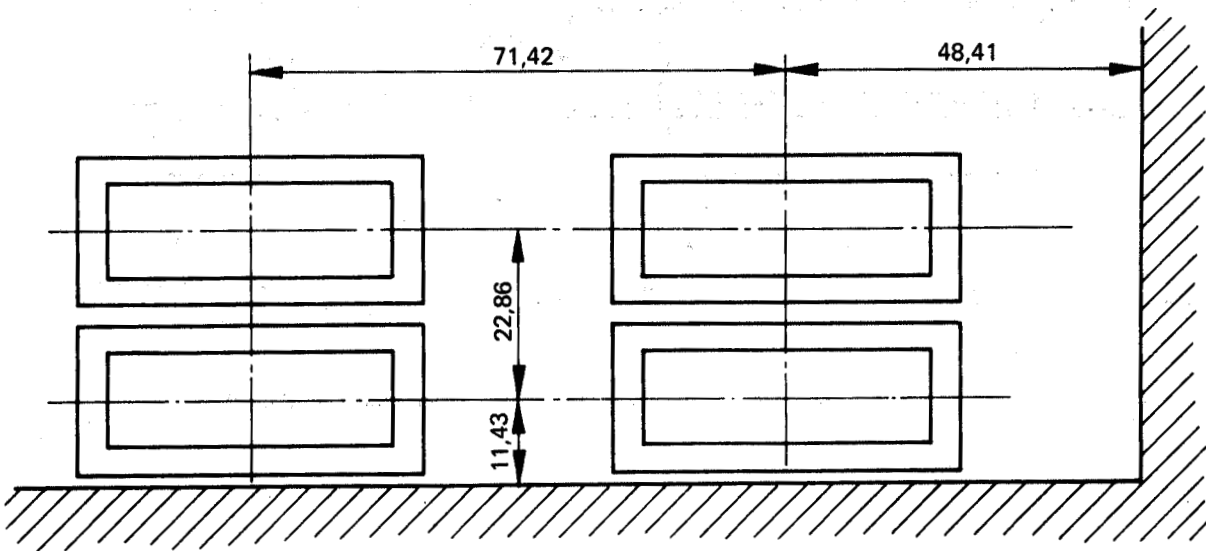


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Access space at side



Access space at end

Figure 4 – Minimum spacing for DCE connector mounting



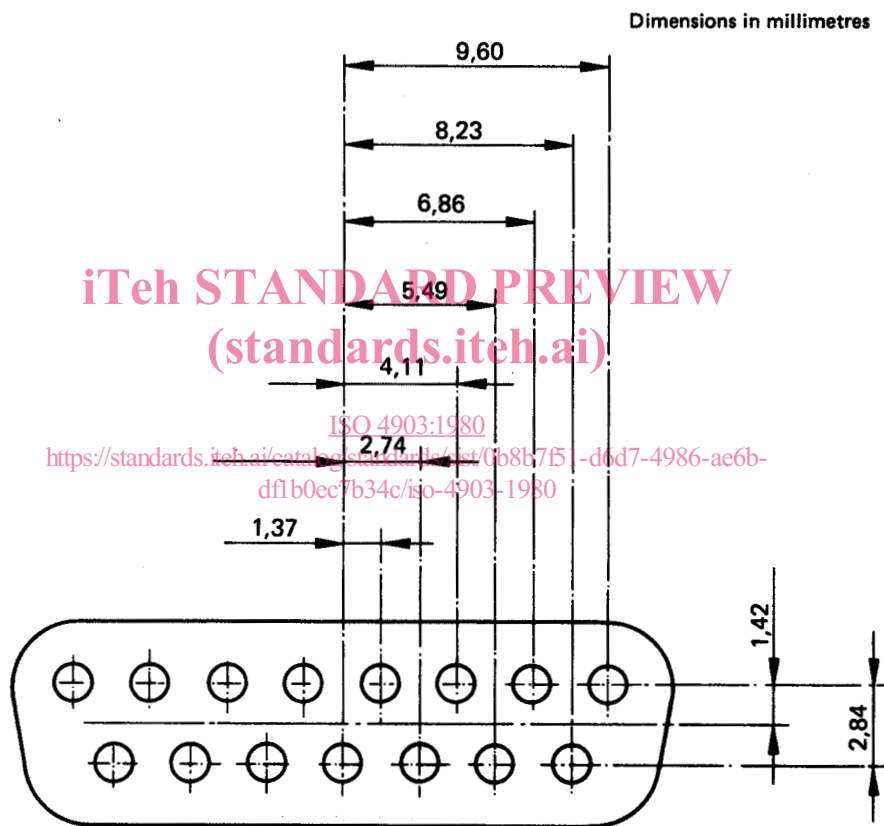


Figure 5 — Insert arrangement

Dimensions in millimetres

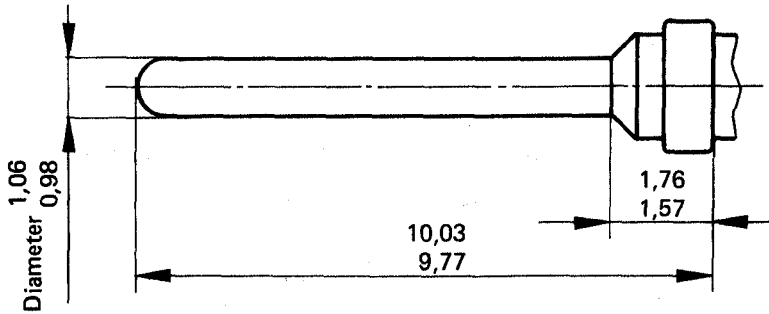


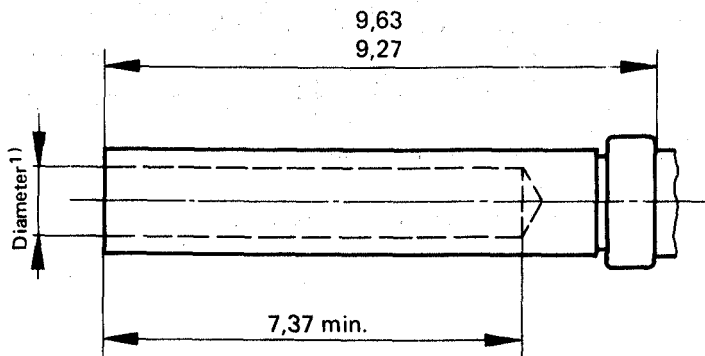
Figure 6 – Male contact

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Dimensions in millimetres



1) When the pin is mated with the socket, sufficient force shall be applied by the socket to ensure proper electrical contact.

Figure 7 – Female contact

## Annex A

### Generator/Receiver interconnecting configurations

(This annex provides additional information and does not form an integral part of the International Standard.)

#### A.1 CCITT Recommendation X.20

CCITT Recommendation X.20 states that the electrical characteristics of CCITT Recommendation X.26 apply to the DCE side of the interface while electrical characteristics of either CCITT Recommendations X.26, X.27 (without optional cable termination in the load), or V.28 may apply to the DTE side of the interface. Figures 8 and 9 provide diagrams of the associated interconnecting configurations for X.26 and X.27 DTE. For interconnection of X.20/X.26 DCE with DTE using V.28 electrical characteristics and the 25-pin connector according to ISO 2110, refer to annex B of this International Standard.

#### A.2 CCITT Recommendation X.21

CCITT Recommendation X.21 states that the electrical characteristics of CCITT Recommendation X.27 (without optional cable termination in the load) apply to the DCE while electrical characteristics of either X.26 or X.27 (without optional cable termination in the load) may apply to the DTE for synchronous classes of operation at 9,6 kbit/s and below. For synchronous classes of operation above 9,6 kbit/s, the electrical characteristics of X.27 with optional cable termination in the load apply to both the DTE and DCE. Figures 10 and 11 provide diagrams of the associated interconnecting configurations for X.26 and X.27 DTE.

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