
International Standard



4902

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Data communication — 37-pin and 9-pin DTE/DCE interface connectors and pin assignments

Téléinformatique — Affectation des broches et description des connecteurs 37 et 9 broches à la jonction entre ETTD et ETCD

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

International Standard ISO 4902 was developed by Technical Committee ISO/TC 97, *Computers and information processing*, and was circulated to the member bodies in February 1979.

It has been approved by the member bodies of the following countries :

Australia	Hungary	South Africa, rep. of
Belgium	Italy	Spain
Czechoslovakia	Japan	Sweden
Denmark	Libyan Arab Jamahiriya	Switzerland
Egypt, Arab Rep. of	Mexico	United Kingdom
Finland	Netherlands	USA
France	Poland	
Germany, F.R.	Romania	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Canada
USSR

Data communication — 37-pin and 9-pin DTE/DCE interface connectors and pin assignments

1 Scope and field of application

This International Standard specifies the 37-pin and 9-pin connectors and the assignment of connector pin numbers at the interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) where CCITT¹⁾ Recommendation V.24 together with Recommendations V.10 and V.11 are applicable. Use of the 9-pin connector only applies when a backward channel capability is implemented in an interface.

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 (DTE) and data circuit-terminating equipment (DCE).*

CCITT Recommendation V.26, *2 400 bits per second modem standardized for use on 4-wire leased telephone-type circuits.*

CCITT Recommendation V.26 bis, *2 400/1 200 bits per second modem standardized for use in the general switched telephone network.*

CCITT Recommendation V.27, *4 800 bits per second modem with manual equalizer standardized for use on leased telephone-type circuits.*

CCITT Recommendation V.27 bis, *4 800 bits per second modem with automatic equalizer standardized for use on leased telephone-type circuits.*

CCITT Recommendation V.27 ter, *4 800/2 400 bits per second modem standardized for use in the general switched telephone network.*

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

CCITT Recommendation V.29, *9 600 bits per second modem standardized for use on leased telephone-type circuits.*

CCITT Recommendation V.36, *Modems for synchronous data transmission using (60 — 108 kHz) group band circuits.*

2 References

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

ISO 4903, *Data communication — 15-pin DTE/DCE interface connector and pin assignments.*

CCITT Recommendation V.10 (or X.26), *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 (or X.27), *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, *200-baud modem standardized for use in the general switched telephone network.*

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1) International Telegraph and Telephone Consultative Committee.

3 Connectors

Figures 1 to 7 illustrate the 37-pin interface connector and the 9-pin interface connector. Only those dimensions that are essential to mating are shown. Figures 1a) and 1b) illustrate the DTE interface connector(s) which have female contacts and male shells. Contact numbering is specified in these figures. The DCE interface connector(s) shall be equipped with the two latching blocks as specified in figures 2a) and 2b). The DTE interface connector(s) shall be equipped with means for latching to these blocks. The means for latching the DTE connector(s) to the blocks on the DCE connector(s) is subject to the 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 connector(s) can be latched and disconnected within the access space available for both arrangements illustrated in figure 4. This will permit DCE interface connectors to be mounted with the clearances shown for either of the two arrangements in figure 4. Figure 5 illustrates the dimensions for the pin layout. Figures 6 and 7 illustrate the dimensions of the pin and mating socket respectively.

The specification for the connectors 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 selected interchange circuits specified in CCITT Recommendation V.24 that may be implemented in modems complying with CCITT Recommendations V.21, V.23, V.26, V.26 bis, V.27, V.27 bis, V.27 ter,

V.29 and V.36 are given in tables 1 and 2. Although tables 1 and 2 provide the total list of interchange circuits designated in all the above listed modem CCITT Recommendations, only the set of interchange circuits required for the particular equipment needs to be implemented. Application of the 9-pin connector assignments in table 2 is only necessary when the backward channel capability for the interface is implemented. Table 3 gives a list of the applicable interchange circuits and their description. Additionally, notes 5 and 6 for table 1 provide preferred pin assignments for some optional circuits which may be applied for national use.

5 Interconnecting configurations for mixed use of electrical characteristics

Considerations for interworking of equipment implementing V.10 on one side of the interface with equipment meeting V.11 on the other side of the interface are given in annex 2 of CCITT Recommendations V.10 and V.11. In addition, definition of the category 1 and 2 receiver configurations is provided in V.10. Guidance concerning possible interconnecting configurations that may be applied is given in annex A.

Guidance concerning adaptation necessary when there is a need for a DTE or DCE implementing V.10 characteristics to interwork with a DCE or DTE implementing V.28 characteristics, is given in annex B. Any adapters required to accomplish the interworking with V.28 and ISO 2110 shall be provided with the equipment meeting ISO 4902. No revisions or modifications shall be required in the existing 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 the 37-pin connector⁷⁾

First segment assignment ²⁾			Second segment assignment ²⁾			Receiver category ⁴⁾	Direction to	
Pin number	Circuit number	Interchange points ³⁾	Pin number	Circuit number	Interchange points ³⁾		DTE	DCE
1	See note 1	—	20	102b	C-B'	2	—	—
2	N	A-A'	21	N	See note 5	See note 5	X	—
3	N	A-A'	22	103	B/C-B'	1	—	X
4	103	A-A'	23	114	B/C-B'	1	X	—
5	114	A-A'	24	104	B/C-B'	1	X	—
6	104	A-A'	25	105	B/C-B'	1	—	X
7	105	A-A'	26	115	B/C-B'	1	X	—
8	115	A-A'	27	106	B/C-B'	1	X	—
9	106	A-A'	28	N	A-A'	2	—	X
10	141	A-A'	29	107	B/C-B'	1	X	—
11	107	A-A'	30	108*	B/C-B'	1	—	X
12	108*	A-A'	31	109	B/C-B'	1	X	—
13	109	A-A'	32	N	A-A'	2	—	X
14	140	A-A'	33	N	A-A'	2	X	—
15	125	A-A'	34	N	A-A'	2	—	X
16	111 or 126+	A-A'	35	113	B/C-A'	1	—	X
17	113	A-A'	36	N	A-A'	2	X	—
18	142	A-A'	37	102a	C-B'	2	—	X
19	102	C-C'						

Legend : N – Pin number permanently reserved for national use. (See note 6.)

* – Circuit 108/1 or 108/2.

+ – Two circuits sharing same pin assignment.

Table 2 – Pin assignments for the 9-pin connector⁷⁾

First segment assignment ²⁾			Second segment assignment ²⁾			Receiver category ⁴⁾	Direction to	
Pin number	Circuit number	Interchange points ³⁾	Pin number	Circuit number	Interchange points ³⁾		DTE	DCE
1	See note 1	—	6	102b	C-B'	2	—	—
2	122	A-A'	7	120	A-A'	2	X	—
3	118	A-A'	8	121	A-A'	2	—	X
4	119	A-A'	9	102a	C-B'	2	X	—
5	102	C-C'						

NOTES

1 Pin 1 is assigned for connecting the shields between tandem sections of the 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 The pin assignments for each segment have been aligned to specify pairing and connection to multipaired interconnecting cable. Each row of the table presents the respectively paired pins, i.e. 2 and 20, 3 and 21, etc. (table 1); 2 and 6, 3 and 7, etc. (table 2).

3 A, A', B, B', C and C' indicate the associated interchange points as designated in figure 2 of CCITT Recommendations V.10 and V.11. Where B/C is indicated in table 1, the B designation applies only when a V.11 generator is used and the C designation applies only when a V.10 generator is used. (See annex A.)

4 The receiver categories are as designated in V.10. Where category 1 receivers apply, either V.10 or V.11 generators may be used except for V.36 wideband modems where only V.11 generators may be used for circuits 103, 104, 113, 114, 115. Where category 2 receivers apply, V.10 generators are used.

5 Pins 3 and 21, which are permanently reserved for national use, may each be used individually for interconnection of A-A' interchange points with category 2 receivers. These two circuits must be in the same direction. Alternatively pins 3 and 21 may be combined for interconnection of a pair of interchange points with one category 1 receiver. In this case, pin 21 would be used to interconnect interchange points B/C-B' while pin 3 interconnects interchange points A-A'.

6 Preferred assignments of circuits which may be applied for national use are as follows :

Pin number	Circuit number	Description
2	112	Data signalling rate selector (DCE source)
28	135*	Terminal available for service
32	116	Select standby
33	110	Data signal quality detector
34	136*	New signal
36	117	Standby indicator

* These circuits are a subject of further study and have not been approved by the CCITT.

7 When the V.28 electrical characteristics are used for CCITT Recommendations V.21, V.23, V.26, .26 bis, V.27, V.27 bis, V.27 ter and V.29, the connectors and pin assignments of ISO 2110 apply.

Table 3 — List of interchange circuits

Circuit number	Description
102	Signal ground or common return
102a	DTE common return
102b	DCE common return
103	Transmitted data
104	Received data
105	Request to send
106	Ready for sending
107	Data set ready
108/1	Connect data set to line
108/2	Data terminal ready
109	Data channel received line signal detector
110	Data signalling rate selector (DTE source)
111	Transmitter signal element timing (DTE source)
114	Transmitter signal element timing (DCE source)
115	Receiver signal element timing (DCE source)
118	Transmitted backward channel data
119	Received backward channel data
120	Transmit backward channel line signal
121	Backward channel ready
122	Backward channel received line signal detector
125	Calling indicator
126	Select transmit frequency
140	Remote loopback for point-to-point circuits
141	Local loopback
142	Test indicator

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Dimensions in millimetres

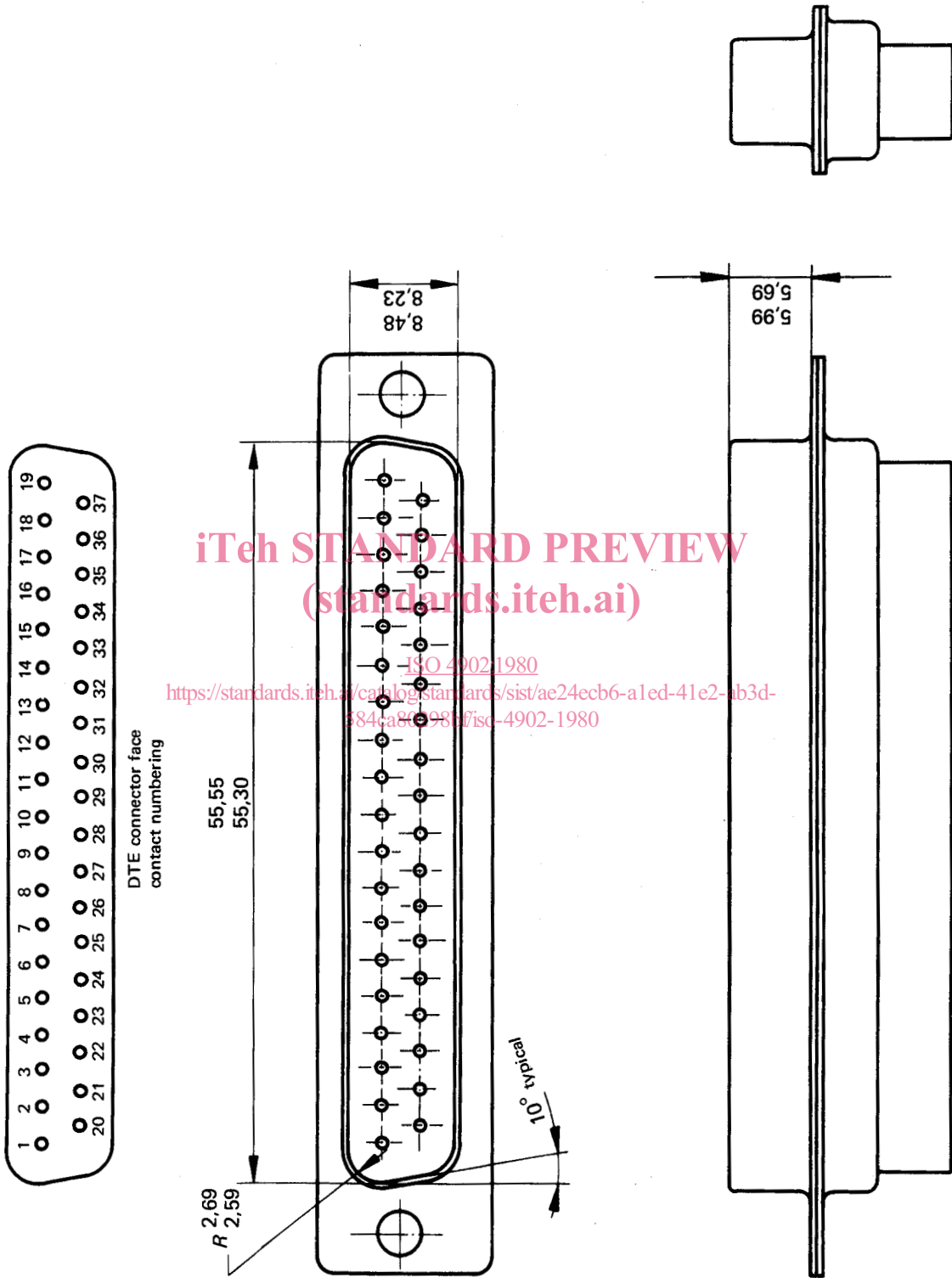
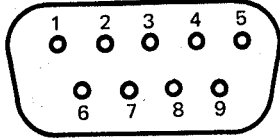


Figure 1a) — DTE 37-pin interface connector

Dimensions in millimetres



DTE connector face contact numbering

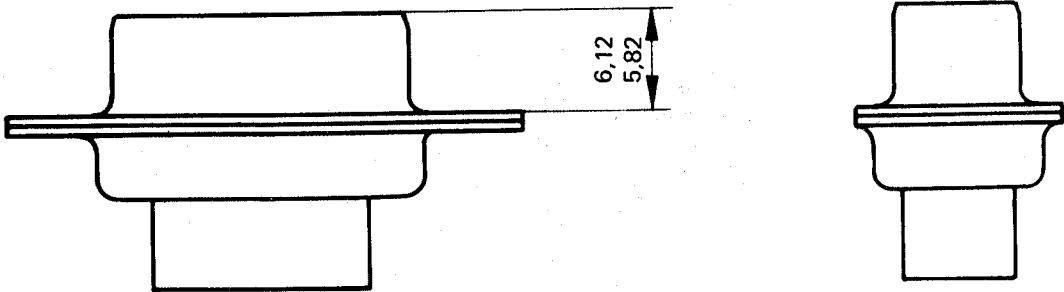
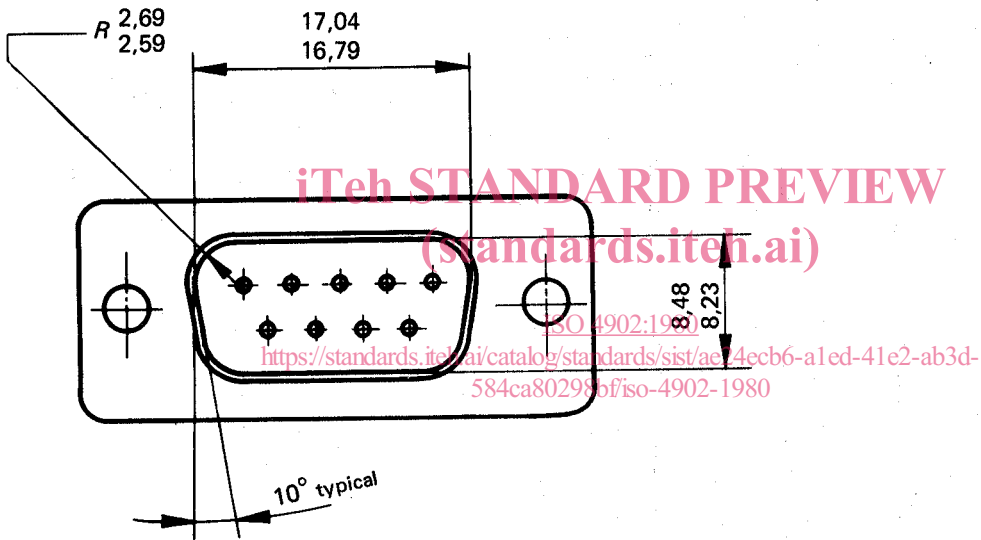
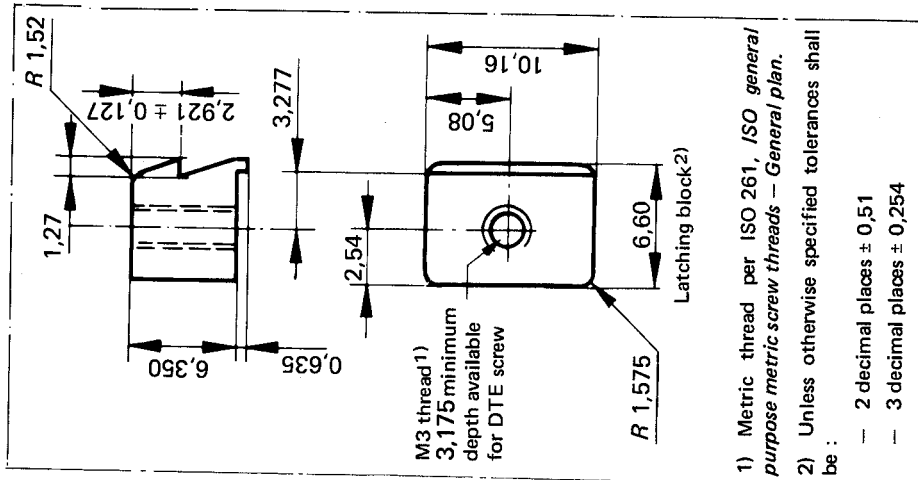


Figure 1b) — DTE 9-pin interface connector

Dimensions in millimetres



- 1) Metric thread per ISO 261, ISO general purpose metric screw threads – General plan.
- 2) Unless otherwise specified tolerances shall be:
 - 2 decimal places $\pm 0,51$
 - 3 decimal places $\pm 0,254$

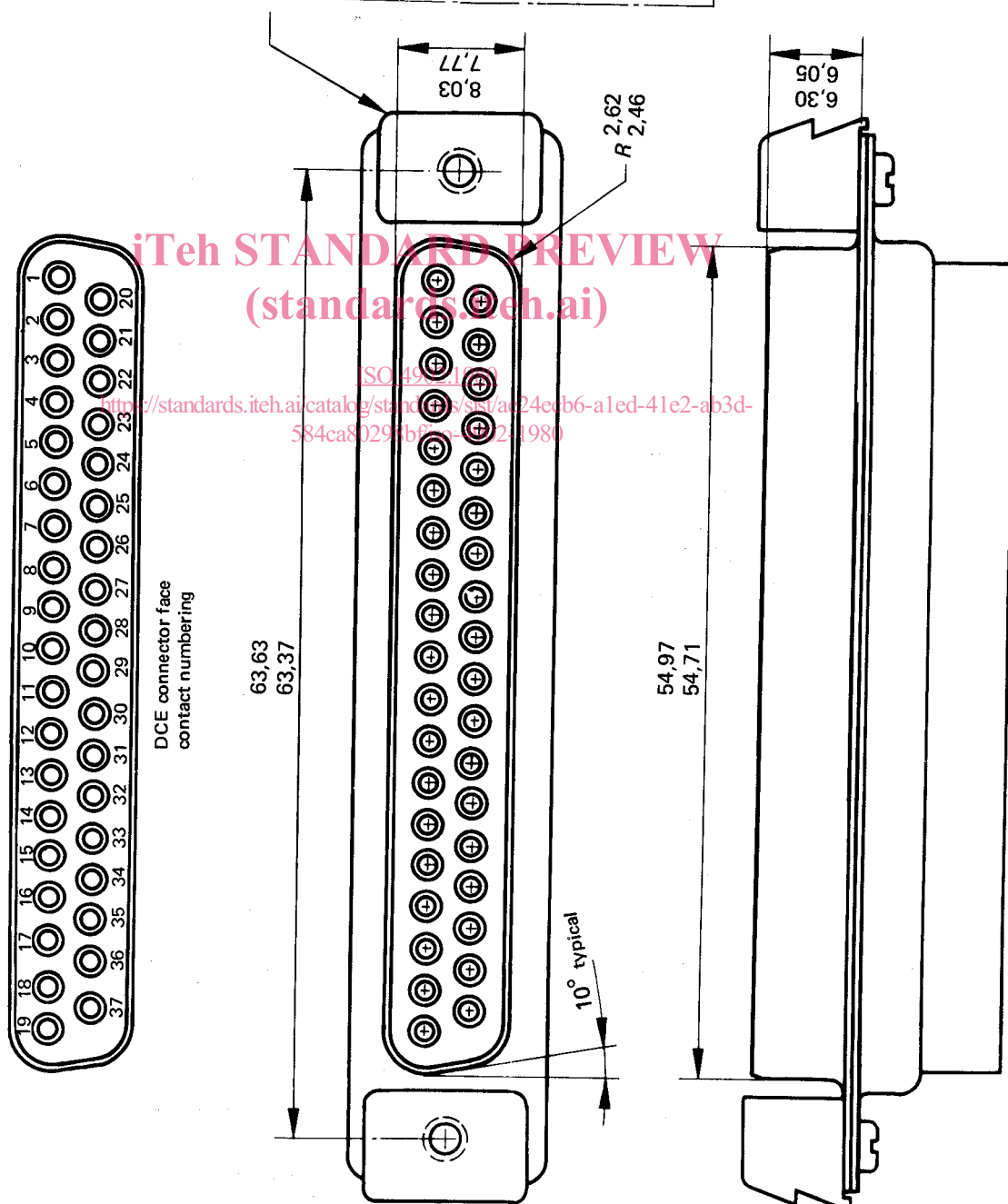
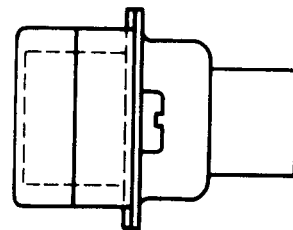


Figure 2a) — DCE 37-pin interface connector

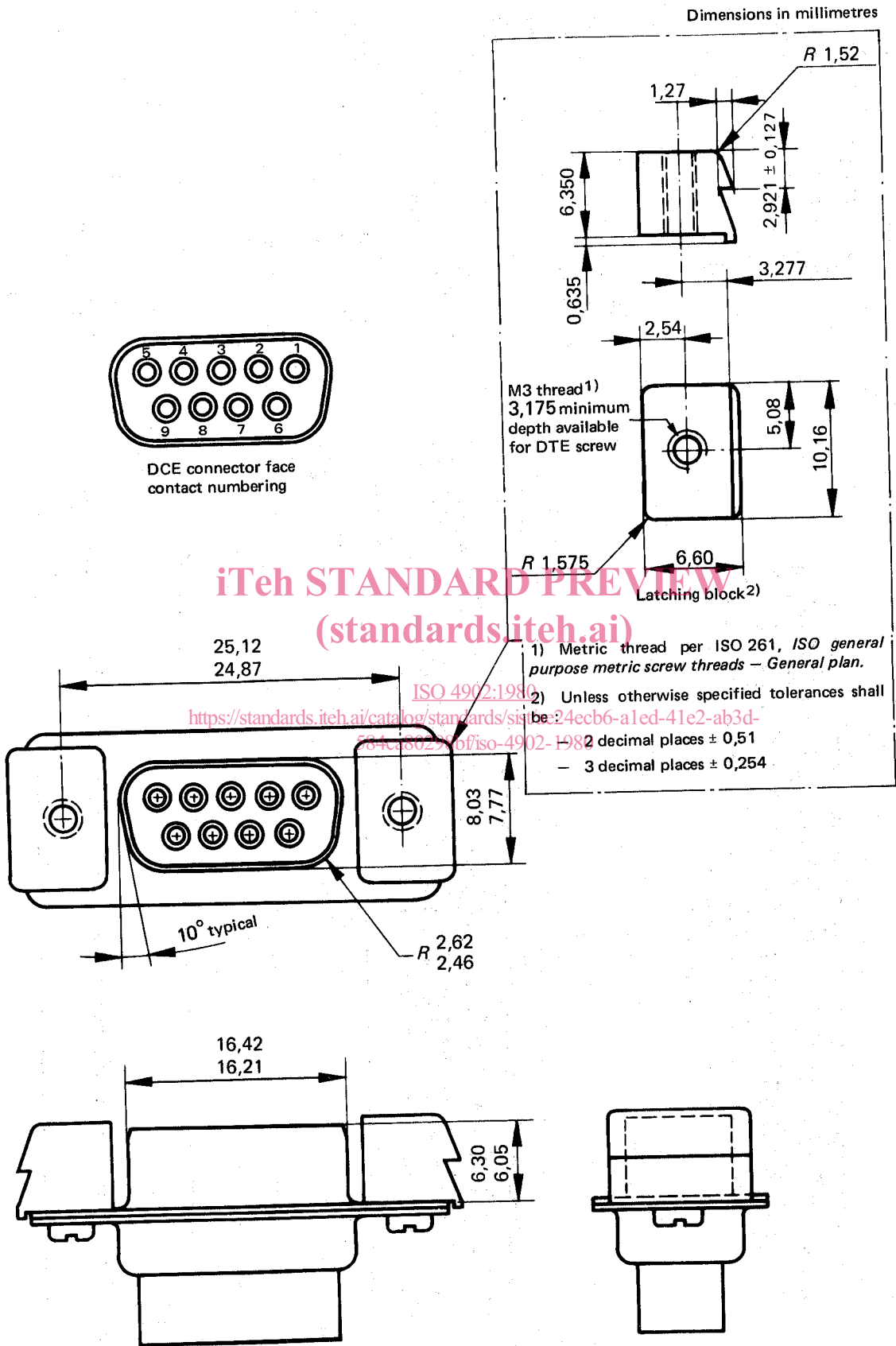
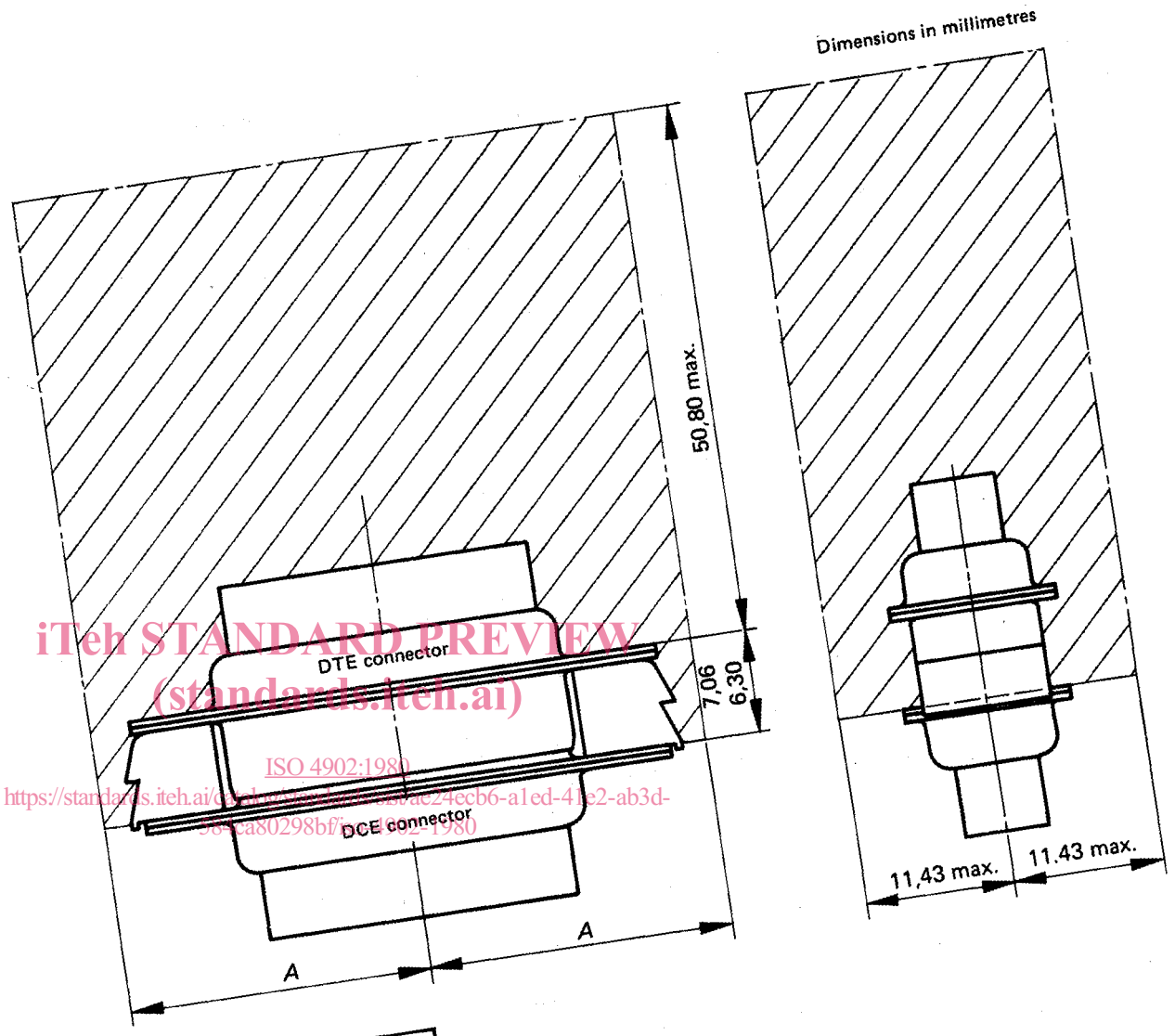


Figure 2b) – DCE 9-pin interface connector



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Connector	A dimension
37-pin	38,10 max.
9-pin	18,85 max.

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