

Information technology — International Standardized Profiles FVT1nn — Virtual Terminal Basic Class — Register of VTE-profiles —

Part 1: FVT121, FVT122 — S-mode
Forms and Paged VTE-profiles

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Summary of pages

This document comprises a front cover, an inside front cover, the ISO/IEC ISP title page, pages ii to iv, pages 1 to 28 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

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**Information technology — International
Standardized Profiles FVT1nn — Virtual
Terminal Basic Class — Register of
VTE-profiles —**

Part 1:

FVT121, FVT122 — S-mode Forms and Paged
VTE-profiles

*Technologies de l'information — Profils normalisés internationaux
FVT1nn — Classe de base de terminal virtuel — Registre de profils
VTE —*

*Partie 1: FVT121, FVT122 — Profils VTE mode S de formulaires et de
paginés*



Reference number
ISO/IEC ISP 11184-1:1995(E)

Contents

	Page
Foreword	iv
Introduction	1
1 Scope	1
1.1 General	1
1.2 Position within the taxonomy	2
1.3 Scenario	3
2 Normative references	4
3 Definitions	5
3.1 General OSI terminology	5
3.2 Terminology of VT standards	5
3.3 Additional terminology of controlled data entry	5
4 Abbreviations	6
5 Principles of conformance to VT Profiles	6
6 Entry number	6
7 Name of sponsoring authority	7
8 Date	7
9 Identifier	7
10 Descriptor value	7
11 Mode	7
12 VT functional units	7
13 Profile arguments	7
13.1 Interpretation	7
13.2 VTE-profile argument definitions	8
14 VTE-profile body	11
14.1 Specification	11
14.2 CO type definitions	16
15 Additional information	16
15.1 Emphasis specification	16
15.2 Application signals	18
15.3 Terminal signals	19
15.4 Semantics of the Waiting Time CO	19
15.5 Semantics of the Device Default COs	20
15.6 Access restrictions	20
15.7 Optional control objects	21
16 Usage	21
ANNEX A (normative) Profile Requirements List	23
A.1 Protocol requirements	23
Figure 1 — Negotiation of a VTE through use of a VTE-profile	3
Table 1 — Emphasis subattribute values	17
Table 2 — Names assigned to application signals	19
Table 3 — Names of signal items	19
Table 4 — Names for base values of the “special” type	20
Table A.1 — VT Service requirements	23
Table A.2 — VTE requirements for display object	24
Table A.3 — Attribute support	24
Table A.4 — VTE requirements for main device	25
Table A.5 — VTE requirements for secondary device	25
Table A.6 — VTE requirements for Control Object Types	25
Table A.7 — VTE requirements for Control Object Parameters	26

	Page
Table A.8 — VTE requirements for Control Object Data Elements	27
Table A.9 — PDU requirements	28
Table A.10 — Special VTE-profile argument requirements	28

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Foreword

ISO (the International Organization for Standardization) and IEC (the Inter-national Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. In addition to developing International Standards, ISO/IEC JTC 1 has created a Special Group on Functional Standardization for the elaboration of International Standardized Profiles.

An International Standardized Profile is an internationally agreed, harmonized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or set of functions.

Draft International Standardized Profiles are circulated to national bodies for voting. Publication as an International Standardized Profile requires approval by at least 75 % of the national bodies casting a vote.

International Standardized Profile ISO/IEC ISP 11184-1 was prepared with the collaboration of

- OSI Asia-Oceania Workshop (AOW);
- European Workshop for Open Systems (EWOS);
- OSI Environment Implementors' Workshop (OIW).

ISO/IEC ISP 11184 forms an International Register of information objects in accordance with the procedures for the operation of OSI Registration Authorities laid down in ISO/IEC 9834. It is issued in parts, with additional parts being issued as further entries are added to the register. Each part is prepared in accordance with an approval and maintenance process laid down by the Special Group on Functional Standardization of ISO/IEC JTC 1, *Information technology*.

ISO/IEC ISP 11184 is issued under the general title *Information technology — International Standardized Profiles FVT1nn — Virtual Terminal Basic Class — Register of VTE-profiles*. At present the following parts are published or are in the course of preparation:

- *Part 1: FVT121, FVT122 — S-mode Forms and Paged VTE-profiles;*
- *Part 2: FVT115 — A-mode Generalized Telnet VTE-profile;*
- *Part 3: FVT114 — A-mode Transparent VTE-profile.*

Annex A forms an integral part of this part of ISO/IEC ISP 11184.

Introduction

ISO/IEC ISP 11184 is defined within the context of Functional Standardization, in accordance with the principles specified in ISO/IEC TR 10000, "Framework and Taxonomy of International Standardized Profiles". The context of Functional Standardization is one part of the overall field of Information Technology (IT) standardization activities, covering base standards, profiles and registration mechanisms.

The Open Systems Interconnection (OSI) Standard ISO 9040 for the Virtual Terminal Basic Class Service identifies a requirement for an International Register of VTE-profiles. Procedures for the operation of this International Register are laid down in ISO/IEC 9834-4. This International Standardized Profile provides this register. The individual entries in this register constitute Interchange Format and Representation Profiles (F-Profiles) within the framework of ISO/IEC TR 10000.

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented for a given OSI specification. Such a statement is called an Implementation Conformance Statement (ICS). The Virtual Terminal Basic Class Service is supported by the Virtual Terminal Basic Class Protocol specified in ISO 9041-1. ISO/IEC ISP 11184 includes, for each registered VTE-profile, a specification of constraints on the content of an ICS for the Virtual Terminal Protocol that shall be satisfied by any conforming implementation which claims to support that VTE-profile.

This part of ISO/IEC ISP 11184 was developed in close cooperation between the three Regional OSI Workshops, namely the OSE Implementors Workshop (OIW) of the United States, the European Workshop for Open Systems (EWOS) and the OSI Asia-Oceania Workshop (AOW). It was developed under the editorship of EWOS from a VTE-profile specification contained in the OIW Stable Implementation Agreements, Version 3 Edition 4 (September 1990). The text is harmonized between these three Workshops and it has been ratified by the plenary assemblies of each Workshop.

1 Scope

1.1 General

The concept of Profiles for OSI, and the structure of the International Standardized Profiles that document them, are defined in ISO/IEC TR 10000-1. Such Profiles are divided into a number of different classes and sub-classes. Two of these classes contain sub-classes comprising functions of the Virtual Terminal Basic Class Service and Protocol specified in the base standards ISO 9040 and ISO 9041. These are the Application Profiles (A-Profiles) and the Interchange Format and Representation Profiles (F-Profiles).

The relationship between A-Profiles and F-Profiles is described in 7.3.2 of ISO/IEC TR 10000-1 and is as follows. Application Layer base standards require, implicitly or explicitly, the structure of information carried or referenced by them to be specified for each instance of communication. It is the purpose of F-Profiles to specify such information structures. Particular functional requirements may then be met by the combination of an A-Profile with one or more F-Profiles.

The Virtual Terminal Basic Class Service and Protocol applies to applications requiring interactive communication with terminal systems through the transmission and manipulation of graphical images composed of character-box graphic elements. Through the selection by negotiation of various options, it may be used to realise a wide range of distinct functions. This process of negotiation involves the selection of a set of VT functional units together with a particular Virtual Terminal Environment profile (VTE-profile) and particular values for any arguments of that VTE-profile.

The specification of a VTE-profile and the permitted values for its arguments may themselves reference other types of object defined in accordance with ISO 9040. These are VT control object types and assignment types. The VTE-profiles, control object types and assignment types are thus information structures that require explicit reference within the VT protocol. Particular instances of these structures are fully defined within the base standards, but the base standards also provide for further instances to be defined by registration. Each registered instance constitutes an F-Profile within the framework of ISO/IEC TR 10000. The specification of the selection of options required to realise a particular function and to promote interoperability constitutes a Virtual Terminal A-Profile within the framework of ISO/IEC TR 10000.

The three International Registers of VT information structures and the specifications of VT Application Profiles are each published as a separate multi-part ISP as follows:

- ISO/IEC ISP 11184 is the Register of VTE-profiles;
- ISO/IEC ISP 11185 is the Register of control object type definitions;
- ISO/IEC ISP 11186 is the Register of assignment-type definitions;
- ISO/IEC ISP 11187 contains the specifications of VT Application Profiles.

This part of ISO/IEC ISP 11184 contains the specifications of the S-mode Forms and Paged VTE-profiles, both of which operate in the synchronous mode of the Virtual Terminal Service. These VTE-profiles make use of the ability of the Virtual Terminal Service to provide a display object with a structure of fields that have associated entry controls. This structure enables an application process to provide comprehensive facilities for local processing during data entry by a terminal. Such delegation to the terminal of the control of data entry may reduce significantly the demands placed on the application end system and the communication network and may substantially improve the response time to users' actions.

The Forms and Paged VTE-profiles differ in only one respect. The Paged VTE-profile provides a facility for the terminal to notify the application end system that its capability to process the field structure of the display object is restricted. This facility is not present in the Forms VTE-profile.

NOTE It is intended that applications which use the Paged VTE-profile should be capable of use with terminal end systems based on real block-oriented, as distinct from character-oriented, terminals. Certain real block-oriented terminals implement a field handling mechanism in hardware in a manner that prevents a character being displayed in the character-box display element immediately preceding a field. The additional facility in the Paged VTE-profile enables a terminal to notify the application end system that it is of this type.

This specification includes Profile Requirements Lists (Profile RLs) for the S-mode Forms and Paged VTE-profiles in compliance with the relevant requirements, and in accordance with the relevant guidance, given in ISO/IEC 9646-7. These RLs apply to the PICS proforma for the VT protocol that is given in ISO/IEC 9041-2. They provide constraints on the answers that may be given in that proforma for an implementation of the VT protocol which claims to support the VTE-profile concerned.

1.2 Position within the taxonomy

The taxonomy of International Standardized Profiles for OSI is laid down in ISO/IEC TR 10000-2. Within the classification scheme of this taxonomy, the OSI Profiles specified in this International Standardized Profile are in the Virtual Terminal Registered Object sub-class of the class of Interchange Format and Representation Profiles.

A Profile within this subclass has a Profile identifier of the form FVTabc, where *abc* is a structured numerical identifier that identifies the position of the Profile within each of the three levels of subdivision of the subclass. The values of *a* and *b* are single digits but *c* is an integer that is not necessarily a single digit.

In principle the ISO Virtual Terminal model allows for multiple classes of operation, although at the time of publication of this International Standardized Profile only the Basic Class has been defined. The value of the identifier component *a* distinguishes between distinct types of information object as follows:

- *a* = 1 for Basic Class VTE-profiles;
- *a* = 2 for Basic Class Control Objects;
- *a* = 3 for Basic Class Assignment Types.

Values of *a* greater than 3 are reserved for future developments.

ISO/IEC ISP 11184 contains the specifications of the Profiles with identifiers of the form FVT1bc. For this form of identifier, the component *b* distinguishes between the two modes of operation of the Virtual Terminal Service as follows:

- *b* = 1 for A-mode (asynchronous mode) operation;
- *b* = 2 for S-mode (synchronous mode) operation.

Values of *b* greater than 2 are reserved for new modes of operation that may be defined in future amendments to ISO 9040. The identifier component *c* distinguishes between different VTE-profiles with the same mode of operation. The procedures of ISO/IEC 9834-4 require a single register of VTE-profiles to be maintained without regard to their mode of operation. The value of the component *c* is therefore not directly related to the serial number of the VTE-profile in the register.

This part of ISO/IEC ISP 11184 contains the specifications of the VTE-profiles with the Profile identifiers

- FVT121 — S-mode Forms VTE-profile;
- FVT122 — S-mode Paged VTE-profile.

1.3 Scenario

The specification of the Virtual Terminal Service is given in ISO 9040. It is based on a model in which two VT-users communicate by means of a shared Conceptual Communication Area (CCA) that is a conceptual part of the VT service-provider.

Information exchange is modelled by one VT-user updating the content of the CCA and the changed state of the CCA then being made accessible to the peer VT-user. The Virtual Terminal Service has a basic capability that may be enhanced by the addition of one or more optional functional units.

The CCA is structured by the Virtual Terminal Service into a number of components. There is a Conceptual Data Store (CDS) that contains one or two display objects (DOs), a Control, Signal and Status store (CSS) that contains zero, one or more control objects (COs) and in addition there may be one or more device objects. Display objects and control objects have an information content that is modified during the data handling phase of the VT Service. Device objects model certain logical characteristics of real devices. They may also provide linkages between different objects of the CCA and between such objects and real devices.

There are two modes of operation of the VT Service. In synchronous mode (S-mode) there is a single display object that is updated alternately by the two VT-users while in asynchronous mode (A-mode) there are two display objects, each VT-user having permanent update access to one of them. The mode of operation, the functional units selected and the set of objects present in the CCA at any time constitute a Virtual Terminal Environment (VTE).

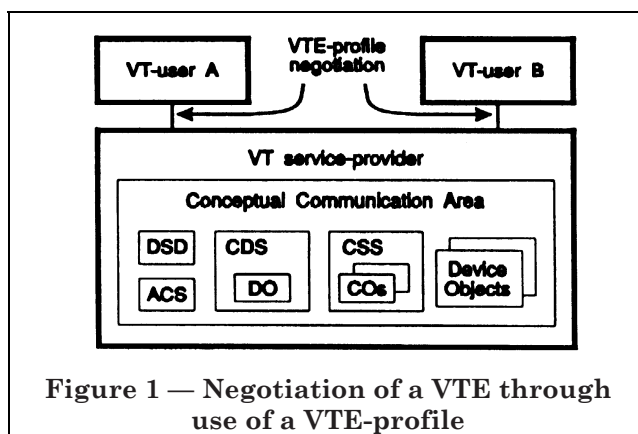
The specification of the VTE, including the type definitions of the objects present, is held in the Data Structure Definition (DSD) component of the CCA. Ownership of the Write Access Variable (WAVAR) that is used during S-mode operation is held in the Access Control Store (ACS). These complete the set of components of the CCA.

A VTE is specified parametrically by a complete and consistent set of values for VTE-parameters defined in ISO 9040. The number of these VTE-parameters is large, so their values are themselves specified in a particular instance by a choice of VTE-profile and of values for any arguments of that VTE-profile. The VTE in use at any time is determined by negotiation of these choices between the two VT-users before entry into the data handling phase. This negotiation takes place by the exchange of VT service primitives that are available exclusively for this purpose, as is illustrated in Figure 1. The negotiation will determine whether or not the VTE is established in accordance with a VTE-profile defined in this part of ISO/IEC ISP 11184. It is possible for the VTE to be changed during the lifetime of a VT-association but only by exit from and subsequent return to the data handling phase.

The negotiation process may establish values of certain VTE-profile arguments indirectly through the use of default mechanisms. In the simplest form of this mechanism a VTE-profile may specify an explicit default value for any argument that does not have an explicitly negotiated value. However, it is possible for the default value of one VTE-profile argument to depend on the actual values of other arguments, some of which may themselves be determined by a default mechanism. A VTE-profile may also permit a default value to be specified by a VT Application Profile whenever a mutual agreement exists between the VT-users to operate in conformance with a particular Profile.

The type definitions of certain control objects may specify that particular aspects of the CO definition, such as the initial value of its information content, are to be determined by any VTE-profile that references the CO type concerned. The VTE-profile may also determine these indirectly in a manner similar to that described above for default values of VTE-profile arguments.

This part of ISO/IEC ISP 11184 defines the S-mode Forms and Paged VTE-profiles. Each of these VTE-profiles makes use of the Fields functional unit of the VT Service and of the facility of this functional unit in S-mode operation to assign asymmetric roles to the two VT-users. One is then designated as the Terminal VT-user and the other as the Application VT-user. The Application VT-user may define a structure of fields within the display object and may specify separately for each field, rules that control the entry of data into that field by the Terminal VT-user. The Terminal VT-user may be prevented from entering data outside of these defined fields.



This method of operation is particularly suited to the completion of predefined forms but it is by no means restricted to such applications. The rules available for the control of data entry are determined by negotiation through the selection of one or more Field Entry Instruction Control Objects (FEICOs) and Field Entry Pilot Control Objects (FEPCOs). The available FEICOs and FEPCOs provide sufficient flexibility for these VTE-profiles to form the basis of a powerful general-purpose terminal within the VT Service.

The S-mode Forms and Paged VTE-profiles support display devices with either monochrome or colour screens. They provide for a number of levels of emphasis, such as blink, reverse video, bold, underline and italic. Through the use of optional character repertoires, support may be provided for simple graphics such as videotex or line drawing.

The S-mode Forms and Paged VTE-profiles support the use of an auxiliary monochrome or colour printer attached to the terminal configuration. This is intended for printing screen contents or small amounts of information and not for bulk printing for which an OSI Profile of the File Transfer, Access and Management or of the Message Handling subclasses should be used.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 11184. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this International Standardized Profile are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents is that they may be specific to a particular edition. Members of IEC and ISO maintain registers of currently valid International Standards and ISPs, and ITU-T maintains published editions of its current Recommendations.

ISO 2375:1985¹⁾, *Data Processing — Procedure for registration of escape sequences*.

ISO/IEC 8824-1:—²⁾, *Information technology — Open Systems Interconnection — Abstract Syntax Notation One (ASN.1) — Part 1: Specification of Basic Notation*. (See also ITU-T Recommendation X.208.)

ISO 9040:1990, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Service*.

ISO 9041-1:1990, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Protocol — Part 1: Specification*.

ISO/IEC 9041-2:1993, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Protocol — Part 2: Protocol Implementation Conformance Statement (PICS) Proforma*.

ISO/IEC 9646-1:1994, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 1: General concepts* (second edition). (See also ITU-T Recommendation X.290.)

ISO/IEC 9646-7:—³⁾, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 7: Implementation conformance statements*. (See also ITU-T Recommendation X.296.)

ISO/IEC 9834-1:1993, *Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities — Part 1: General procedures*. (See also ITU-T Recommendation X.660.)

ISO/IEC 9834-4:1991, *Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities — Part 4: Register of VTE Profiles*.

ISO/IEC TR 10000-1:1992, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 1: Framework* (second edition).

ISO/IEC TR 10000-2:1994, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 2: Principles and Taxonomy for OSI Profiles* (third edition).

ISO/IEC 10731:1994, *Information technology — Open Systems Interconnection — Basic Reference Model — Conventions for the definition of OSI services*. (See also ITU-T Recommendation X.210.)

ISO/IEC ISP 11185-1:1994, *Information technology — International Standardized Profiles FVT2nn — Virtual Terminal Basic Class — Register of control object type definitions — Part 1: FVT211, FVT212 — Sequenced and Unsequenced Application Control Objects*.

¹⁾ The Registration Authority for ISO 2375 is the European Computer Manufacturers Association (ECMA), 114 rue du Rhône, CH-1204 Genève, Switzerland, from whom the corresponding register, the ISO International Register of Coded Character Sets to be used with Escape Sequences, may be obtained.

²⁾ To be published. (Revision of ISO/IEC 8824:1990.)

³⁾ To be published

ISO/IEC ISP 11185-2:1994, *Information technology — International Standardized Profiles FVT2nn — Virtual Terminal Basic Class — Register of control object type definitions — Part 2: FVT213, FVT214 — Sequenced and Unsequenced Terminal Control Objects*.

ISO/IEC ISP 11185-13:1995, *Information technology — International Standardized Profiles FVT2nn — Virtual Terminal Basic Class — Register of control object type definitions — Part 13:FVT2111 — Waiting Time Control Object*.

3 Definitions

For the purposes of this part of ISO/IEC ISP 11184 the following definitions apply.

3.1 General OSI terminology

3.1.1

this part of ISO/IEC ISP 11184 makes use of the following terms defined in ISO/IEC 10731:

- a) service primitive;
- b) service-provider

3.1.2

this part of ISO/IEC ISP 11184 makes use of the following terms defined in ISO/IEC 8824-1:

- a) module;
- b) object descriptor type;
- c) object identifier

3.1.3

this part of ISO/IEC ISP 11184 makes use of the following terms defined in ISO/IEC 9834-1:

- a) registration;
- b) registration-hierarchical-name

3.1.4

this part of ISO/IEC ISP 11184 makes use of the following terms defined in ISO/IEC 9646-1:

- a) implementation conformance statement (ICS);
- b) implementation conformance statement proforma;
- c) profile requirements list;
- d) profile specific ICS;
- e) requirements list (RL);
- f) static conformance requirement

3.2 Terminology of VT standards

3.2.1

this part of ISO/IEC ISP 11184 makes use of the following terms defined in ISO 9040:

- a) A-mode (Asynchronous mode);
- b) Application VT-user;
- c) array element;
- d) control object;
- e) device object;
- f) display object;
- g) explicit modal default;
- h) full-VTE;
- i) object updating device;
- j) registered control object;
- k) S-mode (Synchronous mode);
- l) secondary attribute;
- m) Terminal VT-user;
- n) VT-association;
- o) VT-environment (VTE);
- p) VT-user;
- q) VTE-parameter;
- r) VTE-profile;
- s) VTE-profile argument;
- t) WAVAR access-right

3.2.2

this part of ISO/IEC ISP 11184 makes use of the following term defined in ISO 9041-1:

- a) protocol element

3.3 Additional terminology of controlled data entry

field-control

an abstract object maintained by a Terminal VT-user that takes a symbolic value from the set ("on", "off"). It may only be present when the VTE-parameter access-outside-fields takes the value "allowed". When its value is "on" then the Terminal VT-user shall be restricted to those operations that would be permitted if access-outside-fields took the value "not allowed"; see 18.2.2 of ISO 9040. When the value is "off" then the Terminal VT-user shall be restricted to those operations that would be permitted if the VTE-parameter field-definition-capability took the value "no".

NOTE Within the model of a Terminal VT-user used by the FEICO and FEPCO specifications given in parts 8-11 of ISO/IEC ISP 11185, the field-control object will be located in the device control store.