INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 10608-14

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Information technology — International Standardized Profile TAnnnn — Connection-mode Transport Service over Connectionless-mode Network Service —

Part 14:

MAC, PHY and PMD sublayer dependent and Station Management requirements over an FDDI LAN subnetwork

Technologies de l'information — Profil normalisé international TAnnnn — Service de transport en mode connexion sur service de réseau en mode sans connexion —

Partie 14: Prescriptions MAC, PHY et PMD dépendantes de la sous-couche et de gestion de station sur un sous-réseau FDDI RLE

Reference number
ISO/IEC ISP 10608-14:1995(E)

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Foreword

ISO (the International Organization for Standardization) and IEC (the International 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 a 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 10608-14 was prepared with the collaboration of

- Asia-Oceania Workshop (AOW);

- European Workshop for Open Systems (EWOS);

- Open Systems Environment Implementors' Workshop (OIW).

ISO/IEC ISP 10608 consists of several parts, under the general title *Information technology - International Standardized Profile TAnnnn - Connection-mode Transport Service over Connectionless-mode Network Service:*

- *Part 1:* *General overview and subnetwork-independent requirements*

- *Part 2:* *TA51 profile including subnetwork-dependent requirements for CSMA/CD Local Area Networks (LANs)*

- *Part 4:* *Definition of profile TA53, operation over a Token Ring LAN subnetwork*

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- *Part 5: TA1111/TA1121 profiles including subnetwork-dependent requirements for X.25 packet-switched data networks using virtual calls*

- *Part 6: Definition of profile TA54, operation over an FDDI LAN subnetwork*

- *Part 13: MAC sublayer and physical layer dependent requirements for a Token Ring LAN subnetwork*

- *Part 14: MAC, PHY and PMD sublayer dependent and Station Management requirements over an FDDI LAN subnetwork*

Annexes A and B form integral parts of this part of ISO/IEC ISP 10608.

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Introduction

ISO/IEC ISP 10608 is defined in accordance with the principles specified by ISO/IEC TR 10000. The context of Functional Standardization is one area in the overall field of Information Technology (IT) standardization activities, covering base standards, profiles, and registration mechanisms. A profile defines a combination of base standards that collectively perform a specific well-defined IT function. Profiles standardize the use of options and other variations in the base standards, and provide a basis for the development of uniform, internationally recognized system tests.

ISPs are produced not simply to 'legitimize' a particular choice of base standards and options, but to promote real system interoperability. One of the most important roles for an ISP is to serve as the basis for the development (by organizations other than ISO and IEC) of internationally recognized test methods. The development and widespread acceptance of tests based on this and other ISPs is crucial to the successful realization of this goal.

ISO/IEC ISP 10608 consists of several parts, of which this is part 14. ISO/IEC ISP 10608-1 specifies the profile requirements which are independent of the subnetwork and media. There are further parts which specify subnetwork-dependent and media-dependent requirements. In addition, for each individual profile, there is a part of ISO/IEC ISP 10608 which identifies the specific requirements of that profile, making reference to appropriate material from part 1 and from the subnetwork-dependent parts.

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Information technology — International Standardized Profile TAnnnn — Connection-mode Transport Service over Connectionless-mode Network Service —

Part 14:
MAC, PHY and PMD sublayer dependent and Station Management requirements over an FDDI LAN subnetwork

1 Scope

1.1 General

This part of ISO/IEC ISP 10608 is applicable to end systems and relay systems operating over FDDI LAN subnetworks in the Open Systems Interconnection (OSI) environment.

This part of ISO/IEC ISP 10608 specifies the subnetwork-type dependent requirements for the MAC, PHY and PMD sublayers, and the Station Management function when the end system or relay system is attached to an FDDI LAN subnetwork.

1.2 Position within the taxonomy

This part of ISO/IEC ISP 10608 relates to any of the transport (Tx, Ux) or relay (Rx) profiles defined in ISO/IEC TR 10000-2, Taxonomy of OSI Profiles, where such profile uses subnetwork type 54 (FDDI Local Area Network). Specifically, this part of ISO/IEC ISP 10608 provides a common set of FDDI subnetwork requirements whenever subnetwork identifier 54 is associated with a transport group or relay type.

1.3 Scenario

The scope of ISPs derived from this part of ISO/IEC ISP 10608 is limited to the end system or relay system characteristics using the FDDI Medium Interface Connector as the reference point.

The scope of this part of ISO/IEC ISP 10608 and its relation to other documents and ISP parts is illustrated in figure 1.

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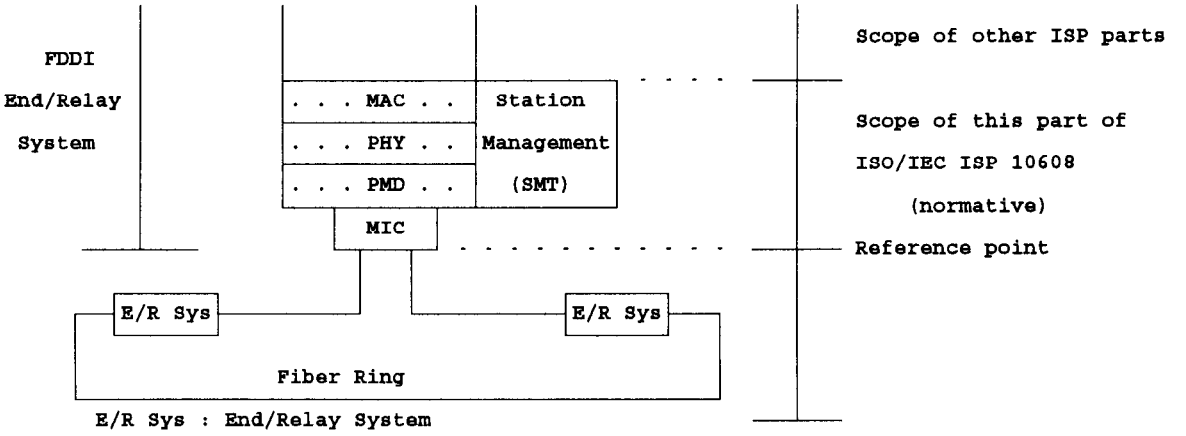

Figure 1 - Scope of this part of ISO/IEC ISP 10608

NOTE - Requirements for Station Management is within the scope of this part of ISO/IEC ISP 10608. However, the base standard for this function is not established yet. Therefore, this edition of ISO/IEC ISP 10608-14 does not include SMT requirements.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 10608. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this part of ISO/IEC ISP 10608 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 9314-1:1989, *Information processing systems - Fibre Distributed Data Interface (FDDI) - Part 1: Token Ring Physical Layer Protocol (PHY).*

ISO 9314-2:1989, *Information processing systems - Fibre Distributed Data Interface (FDDI) - Part 2: Token Ring Media Access Control (MAC).*

ISO/IEC 9314-3:1990, *Information processing systems - Fiber Distributed Data Interface (FDDI) - Part 3: Physical Layer Medium Dependent (PMD).*

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

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

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3 Definitions

All the terms used in this part of ISO/IEC ISP 10608 are defined in the documents that are referenced in clause 2.

4 Abbreviations

All abbreviations, including acronyms, are used in this part of ISO/IEC ISP 10608 as defined in the documents that are referenced in clause 2.

5 Requirements

5.1 MAC sublayer static conformance requirements

An implementation that conforms to this part of ISO/IEC ISP 10608 shall meet the requirements for the MAC sublayer as defined in ISO 9314-2.

The following additional requirements are applicable.

5.1.1 Address

MAC addresses of implementations conforming to this part of ISO/IEC ISP 10608 shall be 6 octets in length (48 bits). MAC address administration is outside the scope of this part of ISO/IEC ISP 10608. In addition, the following capabilities shall be supported for frames with 16-bit addresses:

a) repeating all frames with 16-bit addresses;

b) recognizing the 16-bit broadcast address of all ones;

c) reacting correctly to MAC recovery frames with 16-bit addresses.

NOTE - The base standard contains a footnote indicating that the base standard is likely to be amended such that 48-bit addresses are mandatory.

5.1.2 Information field

The maximum information field length (length of an LLC PDU) that an implementation shall be capable of receiving, shall be at least 4478 octets.

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5.1.3 Parameters

The values of the following parameters shall be configurable:

T_Req
T_Min
T_Max
TVX

5.1.4 Restoring lost indicators

The implementation of restoring lost E,A,C indicators is optional. If an implementation supports this function, the restoring rules shall be as follows:

- The E indicator shall be restored to the set condition based on the value of **E_Flag**, and shall not be restored to the reset condition;

- A and C indicators shall only be restored to the set condition if the corresponding **FC_Actions** causes them to be set, and shall not be restored to the reset condition.

5.2 MAC sublayer dynamic conformance requirements

An implementation that conforms to this part of ISO/IEC ISP 10608 shall meet the requirements for the MAC sublayer as defined in ISO 9314-2.

The following additional requirements are applicable.

5.2.1 Delayed token release

Transmission of the token shall not be delayed by waiting for the return of transmitted frames.

5.2.2 Synchronous service

Synchronous service is outside the scope of this part of ISO/IEC ISP 10608.

5.2.3 Multiple priority level

Use of multiple priority levels for Asynchronous frame transmission is optional. On reception of asynchronous frames, the received priority shall be ignored.

5.2.4 TVX reset

If a station exceeds **L_Max** (maximum length of preamble) on transmission of a frame, it shall issue a well-formed void frame or any other frames to allow all MAC receivers to reset **TVX**.

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5.2.5 Restricted token

The restricted token mode is outside the scope of this part of ISO/IEC ISP 10608.

5.2.6 Implementer's frame

Implementer's frame is outside the scope of this profile.

5.2.7 Additional indicators

The additional indicators shall be repeated; any other action taken by the station is outside the scope of this profile.

5.2.8 Default T_Req

The default value of T_Req shall be equal to the value specified in the SMT base standard.

NOTE - Refer to subclause 5.5 below.

5.3 Requirements for the PHY sublayer

An implementation that conforms to this part of ISO/IEC ISP 10608 shall meet the requirements for the PHY sublayer as defined in ISO 9314-1.

5.4 Requirements for the PMD sublayer

An implementation that conforms to this part of ISO/IEC ISP 10608 shall meet the requirements for the PMD sublayer as defined in ISO/IEC 9314-3.

5.5 Requirements for Station Management

Base standard requirements for FDDI Station Management is currently under development within ISO/IEC JTC 1. Therefore, this edition of ISO/IEC ISP 10608-14 does not contain requirements for Station Management. When an ISO/IEC base standard for Station management becomes available, this subclause will be updated to include any additional constraints required for interoperability of implementations.

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Annex A
(normative)

ISPICS requirements list

A.1 Introduction

The ISPICS requirements list (IPRL) contained in this annex together with the requirements in the main body of this document constitutes the definitive specifications of requirements to conformance to profiles within the scope of this part of ISO/IEC ISP 10608.

Annex B contains an assumed base standard PICS proforma, pending completion of such PICS proforma through ISO/IEC JTC 1. The IPRL in this annex imposes additional constraints for implementations that conform to this part of ISO/IEC ISP 10608. Unless modified by additional constraints in this annex, the requirements in the assumed base standard PICS proforma (annex B) are applicable to implementations that conform to this part of ISO/IEC ISP 10608.

A.2 Notation and conventions

Where appropriate, the ISP requirements are separated into a static part and a dynamic part. The static requirements indicate capabilities that have to be or are allowed to be implemented in a conforming system. The dynamic requirements specify the use of implemented capabilities in order to meet requirements for interworking.

The following tables define the functions to be supported by an implementation for which conformance to this part of ISO/IEC ISP 10608 is claimed, using the notation defined in subclauses A.1.1 and A.1.2 below.

A.2.1 Base standard status symbols

Base standard type or range:

M	mandatory field/function
O	optional field/function
O.<*n*>	optional field/function, but support of at least one of the group of options labeled by the same numeral <*n*> is required
X	prohibited field/function
-	not applicable
<index>:	this predicate symbol indicates that the status or support following it applies only when the PICS states that one or more of the items identified by **<index>** is supported. In the simplest case, **<index>** is the identifying tag of a simple PICS item; **<index>** may also be a list of such tags separated by commas, or may indicate a group of related items

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A.2.2 IPRL status symbols

a) Static requirements

m mandatory field/function (implementation is mandatory)
o optional field/function (implementation is optional)
x prohibited field/function (implementation is prohibited)

b) Dynamic requirements

m mandatory field/function (use is mandatory)
o optional field/function (use is optional)
x excluded field/function (use is prohibited within the context of this part of ISO/IEC ISP 10608)
i out of scope (not relevant to this part of ISO/IEC ISP 10608)
- not applicable

A.3 ISPICS requirements

A.3.1 ISPICS requirements for MAC sublayer

A.3.1.1 Major functions

Index	Function	Base Standard		Profile Feature	
		Clause	Type	Clause	Type
F221	Token Transmission; Delayed Release - SMT Frame	8.1.2	O	5.2.1	x
F4	Ring Scheduling;				
F41	Sync. Service	8.1.4.1	O	5.2.2	i
F42	Async. Service				
F4211	Multi Priority Level	8.1.4.2	O	5.2.3	o
F422	Restricted Token	8.1.4.2	O	5.2.5	i
F11	Restoring Lost Indicators	8.4.2	O	5.1.4	o

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A.3.1.2 PDU types

Index	Function			Base Standard		Profile Feature	
				Clause	Type	Clause	Type
PT1T	Void Frame		Transmit	7.3.3.3	O	5.2.4	o
PT3T PT3R	Restricted Token		Transmit Receive	7.3.3.3	O O	5.2.5	i i
PT6T PT6R	LLC Frame	Sync.	Transmit Receive	7.3.3.3	O O	5.2.2	i i
PT7R		Async.	Receive	7.3.3.3	M	5.2.3	m(1)
PT8T PT8R	Implementer's Frame		Transmit Receive	7.3.3.3	O O	5.2.6	i i

(1) Priority shall be ignored.

A.3.1.3 PDU fields

Index	Field			Base Standard		Profile Feature	
				Clause	Type	Clause	Type
FF4T	**DA,SA:** MAC address	16-bit	Transmit	7.3.4	O.1	5.1.1	x
FF5T		48-bit	Transmit	7.3.4	O.1	5.1.1	m(1)
FF10R	**FS:** Frame Status	Additional Indicators	Receive	7.3.8	O	5.2.7	i

(1): 48-bit address station shall have a minimum 16-bit address capability as follows:
(a) repeating all frames with 16-bit addresses;
(b) recognizing the 16-bit broadcast address of all ones;
(c) reacting correctly to MAC recovery frames with 16-bit addresses.

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A.3.1.4 Timers and timer values

Index	Timer / Timer Value	Base Standard		Profile Feature	
		Clause	Type	Clause	Type
PR41	**T_Min:** Minimum TTRT	7.4.4	> 0 [ms] default ≤ 4.0 [ms]		> 0 [ms], ≤ 4.0 [ms] default = 4.0 [ms]
PR42	**T_Max:** Maximum TTRT	7.4.4	≤ 171.7987 [s] default = 167.77216 [ms]	5.2.8	≤ 171.7987[s] default: ≥ 165, < 200 [ms]

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Annex B[1)]
(normative)

Assumed base standard PICS proforma

B.1 Introduction

This annex contains PICS proforma information assumed for ISO 9314-1, ISO 9314-2 and ISO/IEC 9314-3 since these base standards for FDDI LAN do not already have internationally stable PICS proformas. This annex to ISO/IEC ISP 10608-14 will be removed when PICS proformas are published by ISO/IEC JTC 1.

The supplier of a protocol implementation which is claimed to conform to International Standards ISO 9314-1, ISO 9314-2 and ISO/IEC 9314-3 shall complete the following Protocol Implementation Conformance Statement (PICS) proforma.

A completed PICS proforma is the PICS for the implementation in question. The PICS is a statement of which capabilities and options of the protocol have been implemented. The PICS can have a number of uses, including:

- by the protocol implementor, as a check-list to reduce the risk of failure to conform to the standard through oversight;
- by the supplier and acquirer - or potential acquirer - of the implementation, as a detailed indication of the capabilities of the implementation;
- by the user - or potential user - of the implementation, as a basis for checking the possibility of interworking with another implementation (note that, while interworking can never be guaranteed, failure to interwork can often be predicted from incompatible PICSs);
- by the protocol tester, as the basis for selecting appropriate tests against which to assess the claim for conformance of the implementation.

B.2 Abbreviations and special symbols

B.2.1 Status symbols

The following symbols are used in the PICS Proforma:

M	mandatory field/function
O	optional field/function
O.<*n*>	optional field/function, but at least one of the group of options labelled by the same numeral <*n*> is required
X	prohibited field/function
<item>:	simple-predicate condition, dependent on the support marked for <item>

1) Copyright release for PICS proformas

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B.2.2 Other symbols

T transmission (send)
R reception (receive)

B.3 Instructions for completing the PICS proforma

B.3.1 Conditional status

B.3.1.1 Conditional items

The PICS proforma contains a number of conditional items. These are items for which the status - mandatory, optional or prohibited - that applies is dependent upon whether or not certain other items are supported, or upon the values supported for other items.

Individual conditional items are indicated by a conditional symbol in the Status column as described in B.3.1.2 and B.3.1.3 below. Where a group of items is subject to the same condition for applicability, a separate preliminary question about the condition appears at the head of the group, with an instruction to skip to a later point in the questionnaire if the "Not Applicable" answer is selected.

B.3.1.2 Abbreviated conditions

The abbreviated condition "<item>: <s>" in the Status column is equivalent to a conditional symbol with corresponding condition:

"if <item> then <s>".

B.3.1.3 Predicates

A simple predicate is either:

(a) a single item-reference; or
(b) a relation containing a comparison operator (= , < , etc) with at least one of its operands being an item-reference for an item taking numerical values as its answer.

In case (a) the predicate is true if the item referred to is marked as supported. In case (b), the predicate is true if the relation holds when each item-reference is replaced by the value entered in the Support column.

Compound predicates are boolean expressions constructed by combining simple predicates using the boolean operators AND, OR and NOT, and parentheses, in the usual way. A compound predicate is true if and only if the boolean expression evaluates to true when the simple predicates are interpreted as above.

Items whose references are used in predicates are indicated by an asterisk in the Item column.

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B.4 Identification

Supplier	
Contact point for queries about the PICS	
Implementation Name(s) and Version(s)	
Other information necessary for full identification - e.g. name(s) and version(s) for machines and/or operating systems; System Name(s)	

NOTES

1 Only the first three items are required for all implementations; other information may be completed as appropriate in meeting the requirements for full identification.

2 The terms Name and Version should be interpreted appropriately to correspond with a supplier's terminology (e.g. type, series, model).

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B.5 ISO 9314-2, FDDI MAC sublayer

B.5.1 MAC functions

Index	Function	Clause	Status	N/A	Support	
F1	Frame Transmission	8.1.1	M		Yes[ ]	
	Token Transmission;					
F21	Normal Release	8.1.2	M		Yes[ ]	
	Delayed Release	8.1.2				
F221	- SMT Frame		O		Yes[ ]	No [ ]
F222	- LLC Frame		X		Yes[ ]	No [ ]
F3	Frame Stripping	8.1.3	M		Yes[ ]	
F4	Ring Scheduling;					
F41	Sync. Service	8.1.4.1	O		Yes[ ]	No [ ]
F42	Async. Service					
F421	Non restricted token	8.1.4.2	M		Yes[ ]	
F4211	Multiple Priority Level	8.1.4.2	O		Yes[ ]	No [ ]
F422	Restricted token	8.1.4.2	O		Yes[ ]	No [ ]
F5	Ring Monitoring (by MAC)	8.1.5	M		Yes[ ]	
F6	Claim Token Process	8.1.5.1	M		Yes[ ]	
F7	Initialization Process	8.1.5.2	M		Yes[ ]	
F8	Beacon Process	8.1.5.3	M		Yes[ ]	
F9	Receiver Process	8.3	M		Yes[ ]	
F10	Transmitter Process	8.4	M		Yes[ ]	
F11	Restoring Lost Indicators	8.4.2	O		Yes[ ]	No [ ]

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B.5.2 MAC PDU types

Index	Function			Clause	Status	N/A	Support	
PT1T	Void Frame		Transmit	7.3.3.3	O		Yes[ ]	No [ ]
PT1P			Repeat		M		Yes[ ]	
PT1R			Receive		O		Yes[ ]	No [ ]
PT2T	Nonrestricted Token		Transmit	7.3.3.3	M		Yes[ ]	
PT2P			Repeat		M		Yes[ ]	
PT2R			Receive		M		Yes[ ]	
PT3T	Restricted Token		Transmit	7.3.3.3	O		Yes[ ]	No [ ]
PT3P			Repeat		M		Yes[ ]	
PT3R			Receive		O		Yes[ ]	No [ ]
PT4T	SMT Frame		Transmit	7.3.3.3	M		Yes[ ]	
PT4P			Repeat		M		Yes[ ]	
PT4R			Receive		M		Yes[ ]	
PT5T	MAC Frame		Transmit	7.3.3.3	M		Yes[ ]	
PT5P			Repeat		M		Yes[ ]	
PT5R			Receive		M		Yes[ ]	
PT6T	LLC Frame	Sync.	Transmit	7.3.3.3	O		Yes[ ]	No [ ]
PT6P			Repeat		M		Yes[ ]	
PT6R			Receive		O		Yes[ ]	No [ ]
PT7T		Async.	Transmit	7.3.3.3	M		Yes[ ]	
PT7P			Repeat		M		Yes[ ]	
PT7R			Receive		M		Yes[ ]	
PT8T	Implementer's Frame		Transmit	7.3.3.3	O		Yes[ ]	No [ ]
PT8P			Repeat		M		Yes[ ]	
PT8R			Receive		O		Yes[ ]	No [ ]
PT9T	Future		Transmit	7.3.3.3	X		Yes[ ]	No [ ]
PT9P	Standardization Frame		Repeat		M		Yes[ ]	
PT9R			Receive		X		Yes[ ]	No [ ]

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B.5.3 MAC PDU fields

B.5.3.1 Fields of a token

Index	PDU Field		Clause	Status / Range	N/A	Support	
				[Symbols]			
TF1T	**PA**:Preamble	Transmit	7.3.1	≥ 16		Yes[ ]	No [ ]
TF1P		Repeat	7.3.1	≥ 0		Yes[ ]	No [ ]
TF1R		Receive	7.3.1	≥ 0		Yes[ ]	No [ ]
TF2T	**SD**:Starting Delimiter	Transmit	7.3.2	M		Yes[ ]	
TF2P		Repeat		M		Yes[ ]	
TF2R		Receive		M		Yes[ ]	
TF3T	**FC**:Frame Control	Transmit	7.3.3	M		Yes[ ]	
TF3P		Repeat		M		Yes[ ]	
TF3R		Receive		M		Yes[ ]	
TF4T	**ED**:Ending Delimiter	Transmit	7.3.3.7	M		Yes[ ]	
TF4P		Repeat		M		Yes[ ]	
TF4R		Receive		M		Yes[ ]	

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B.5.3.2 Fields of a frame

Index	PDU Field			Clause	Status / Range	N/A	Support	
					[Symbols]			
FF1T	**PA:**Preamble		Transmit	7.3.1	≥ 16		Yes[ ]	No [ ]
FF1P			Repeat	-(1)	≥ 2		Yes[ ]	No [ ]
FF1R			Receive	7.3.1	≥ 12(2)		Yes[ ]	No [ ]
FF2T	**SD:**Starting Delimiter		Transmit	7.3.2	M		Yes[ ]	
FF2P			Repeat		M		Yes[ ]	
FF2R			Receive		M		Yes[ ]	
FF3T	**FC:**Frame Control		Transmit	7.3.3	M		Yes[ ]	
FF3P			Repeat		M		Yes[ ]	
FF3R			Receive		M		Yes[ ]	
FF4T	**DA,SA:** MAC Address	16-bit	Transmit	7.3.4	O.1(3)		Yes[ ]	No [ ]
FF4P			Repeat		M(3)		Yes[ ]	
FF4R			Receive		M(3)		Yes[ ]	
FF5T		48-bit	Transmit	7.3.4	O.1(4)		Yes[ ]	No [ ]
FF5P			Repeat		M(4)		Yes[ ]	
FF5R			Receive		M(4)		Yes[ ]	
					[Symbols]			
FF6T	**INFO:** Information		Transmit	7.3.5	≤ 8956		Yes[ ]	No [ ]
FF6P			Repeat		≥ 8956		Yes[ ]	No [ ]
FF6R			Receive		≥ 8956		Yes[ ]	No [ ]
FF7T	**FCS:** Frame Check Sequence		Transmit	7.3.6	M(5)		Yes[ ]	
FF7P			Repeat		M		Yes[ ]	
FF7R			Receive		M		Yes[ ]	
FF8T	**ED:** Ending Delimiter		Transmit	7.3.7	M		Yes[ ]	
FF8P			Repeat		M		Yes[ ]	
FF8R			Receive		M		Yes[ ]	
FF9T	**FS:** Frame Status	E,A,C Indicator	Transmit	7.3.8	M		Yes[ ]	
FF9P			Repeat		M		Yes[ ]	
FF9R			Receive		M		Yes[ ]	
FF10T		Additional Indicator	Transmit	7.3.8	O		Yes[ ]	No [ ]
FF10P			Repeat		M		Yes[ ]	
FF10R			Receive		O		Yes[ ]	No [ ]

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(1): Refer to Clause 8.3 of PHY Base Standard

(2): A frame with less than 12 symbols need not be repeated. If not repeated, the whole frame including the SD field shall be stripped.

(3): A 16-bit address station shall have a minimum 48-bit address capability as follows:
(a) repeating frames with 48-bit individual address;
(b) recognizing the 48-bit broadcast address of all ones;
(c) reacting correctly to MAC recovery frames with 48-bit address.

(4): A 48-bit address station shall have a minimum 16-bit address capability as follows:
(a) a fully functional 16-bit individual address;
(b) recognizing the 16-bit broadcast address of all ones;
(c) reacting correctly to MAC recovery frames with 16-bit address.

(5): FCS does not have to be transmitted in void or implementor's frames.

B.5.4 MAC parameter values

B.5.4.1 Timers and timer values

Index	Timer/ Timer Value	Clause	Status / Range	N/A	Support
PR1	**THT:** Token-Holding Timer	7.4.2	M		Yes [ ]
PR2	**TVX:** Valid-Transmission Timer	7.4.3	M / Max{D_Max,F_Max} + Token_Time + F_Max + S_Min Default ≥ 2.5 [ms]		Yes [ ] _____
PR3	**TRT:** Token-Rotation Timer	7.4.4	M / T_Min thru T_Max		Yes [ ] _____
PR4	**TTRT:** Target Token-Rotation Time	7.4.4	M / T_Min thru T_Max		Yes [ ] _____
PR41	**T_Min:** Mininum TTRT	7.4.4	M / > 0 [ms] default ≤ 4.0 [ms]		Yes [ ] _____
PR42	**T_Max:** Maximum TTRT	7.4.4	M / > K x T_Init (default K=4) > M x T_React + N x T_Resp (default M=2, N=6) default ≥ 165[ms]		Yes [ ] _____
PR5	**T_Req:** Requested TTRT	7.4.4 & 8.4.5	M / T_Min thru T_Max		Yes [ ] _____

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B.5.4.2 Counters

Index	Counter	Clause	Status / Range	N/A	Support
CT1	**Late_Ct:** Counter for the number of TRT expiration	7.4.2	M		Yes[ ]
CT2	**Frame_Ct:** Counter of all frames receive and repeated	7.4.3	M(1)		Yes[ ]
CT3	**Error_Ct:** Counter of error frames	7.4.4	M(1)		Yes[ ]
CT4	**Lost_Ct:** Counter of error detected in PDU reception	7.4.4	M(1)		Yes[ ]

(1): The range is a local matter. SMT treats the value as a 32 bit counter.

B.6 ISO 9314-1, FDDI PHY sublayer

B.6.1 PHY sublayer elements

Index	Element	Clause	Status / Range	N/A	Support
PHY01	Clock Detect	8.2.3	O		Yes[ ] No [ ]
PHY02	Elasticity Buffer Error	8.2.4	O		Yes[ ] No [ ]
PHY03	Smoothing Function	8.3	M		Yes[ ]
PHY04	Repeat Filter	8.4	C1:M		Yes[ ] No [ ]

C1: if no MAC entity in the ring

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B.6.2 PHY sublayer details

Index	Element	Clause	Status / Range	N/A	Support
PHY11	Minimum Required Elasticity	8.2.4	± 4.5 [code bit]		Yes[ ] No [ ]
PHY12	Local Clock Base Frequency	8.2.7	125 MHz ± 0.005%		Yes[ ] No [ ]
PHY13	Local Clock Phase Jitter	8.2.7	< ± 8 [deg.] (±0.14 [rad.])		Yes[ ] No [ ]
PHY14	Harmonic Content	8.2.7	≤ -20 [dB]		Yes[ ] No [ ]
PHY15	Nominal code-bit Cell time	8.2.7	8.0 [ns]		Yes[ ] No [ ]
PHY16	Nominal Symbol Time	8.2.7	40.0 [ns]		Yes[ ] No [ ]

B.6.3 PHY sublayer parameters

Index	Element	Clause	Status / Range	N/A	Support
PHY21	**Hi_Max:** Smooth capacity Max (at 14-symbol threshold)	8.3	≥ 2 [Symbols]		Yes[ ] No [ ]
PHY22	**Lo_Max:** Smooth capacity Max (at 12-symbol threshold)	8.3	≥ 2 or = 0 [Symbols]		Yes[ ] No [ ]
PHY23	**AT_Max:** PHY Acqui. Time	8.2.6	defaut = 100 [μs]		Yes[ ] No [ ]
PHY24	**LS_Max:** LS Change Time	8.2.6	default = 15 [μs]		Yes[ ] No [ ]
PHY25	**P_Max:** maximum number of Physical Layer Entities	8.5.2	default = 1000		Yes[ ] No [ ]
PHY26	**D_Max:** Max Ring Latency	8.5.2	default ≤ 1.773 [ms]		Yes[ ] No [ ]

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B.7 ISO/IEC 9314-3, FDDI PMD sublayer

B.7.1 Optical bypass switch

Index	Element	Clause	Status	N/A	Support
PMD05	Optical Bypass Switch	8.3	O		Yes [ ] No [ ]

B.7.2 PMD sublayer parameters

Index	Parameter	Clause	Status / Range	N/A	Support
PMD11	Error rate for reception	8.3	$\leq 2.5 \times 10^{-10}$ (1)		Yes [ ] No [ ]
PMD12	Error rate	8.3	$\leq 1 \times 10^{-12}$ (2)		Yes [ ] No [ ]

(1) Under the minimum Active Input Interface power level.
(2) When the Active Input Interface power level is 2.0 dB or more above the minimum level.

B.7.3 PMD sublayer active output interface

Index	Parameter	Clause	Status / Range	N/A	Support
PMD21	Center Wavelength	8.1	1270 thru 1380 [nm]		Yes [ ] No [ ]
PMD22	Average power	8.1	-14.0 thru -20.0 [dBm]		Yes [ ] No [ ]
PMD23	Rise time (10% to 90%)	8.1	0.6 thru 3.5 [ns]		Yes [ ] No [ ]
PMD24	Fall time (90% to 10%)	8.1	0.6 thru 3.5 [ns]		Yes [ ] No [ ]
PMD25	Duty Cycle distortion peak - peak	8.1	0.0 thru 1.0 [ns]		Yes [ ] No [ ]
PMD26	Data dependent jitter	8.1	0.0 thru 0.6 [ns]		Yes [ ] No [ ]
PMD27	Random jitter, peak-peak	8.1	0.0 thru 0.76 [ns]		Yes [ ] No [ ]
PMD28	Extinction ratio	8.1	0.0 thru 10.0 [%]		Yes [ ] No [ ]

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B.7.4 PMD sublayer active input interface

Index	Parameter	Clause	Status / Range	N/A	Support
PMD31	Center Wavelength	8.2	1270 thru 1380 [nm]		Yes [ ] No [ ]
PMD32	Average power	8.2	-14.0 thru -31.0 [dBm]		Yes [ ] No [ ]
PMD33	Rise time (10% to 90%)	8.2	0.6 thru 5.0 [ns]		Yes [ ] No [ ]
PMD34	Fall time (90% to 10%)	8.2	0.6 thru 5.0 [ns]		Yes [ ] No [ ]
PMD35	Duty Cycle distortion peak - peak	8.2	0.0 thru 1.0 [ns]		Yes [ ] No [ ]
PMD36	Data dependent jitter	8.2	0.0 thru 1.2 [ns]		Yes [ ] No [ ]
PMD37	Random jitter, peak-peak	8.2	0.0 thru 0.76 [ns]		Yes [ ] No [ ]

B.7.5 PMD sublayer bypass interface

Index	Parameter	Clause	Status / Range	N/A	Support
PMD41	Attenuation (in-bound to Out-bound)	8.4	0.0 thru 2.5 [dBm]		Yes [ ] No [ ]
PMD42	Inter-channel Isolation	8.4	≥ 40.0 [dBm]		Yes [ ] No [ ]
PMD43	Switching time (tsi)	8.4	≤ 25.0 [ms]		Yes [ ] No [ ]
PMD44	Media interruption (Tmi)	8.4	≤ 15.0 [ms]		Yes [ ] No [ ]

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B.7.6 PMD sublayer assertion and deassertion interface

Index	Parameter	Clause	Status / Range	N/A	Support
PMD51	Assert time	9.1.1.2	≤ 100.0 [μs]		Yes [ ] No [ ]
PMD52	Deassert time	9.1.1.3	≤ 350.0 [μs]		Yes [ ] No [ ]
PMD53	Assert Power (Pa)	9.1.1.2	Min. Pd(1)+1.5 thru Max. -31.0 [dBm]		Yes [ ] No [ ]
PMD54	Deassert power (Pd)	9.1.1.3	≥ -45.0 [dBm/Pb(2)]		Yes [ ] No [ ]
PMD55	Hysteresis	9.1.1.1	≥ 1.5 [dB]		Yes [ ] No [ ]

(1): min(Pb or -45.0) dBm
(2): input power for BER ≤ 0.01

B.7.7 Keying and receptacle

Index	Keying	Clause	Status	N/A	Support
PMD61	MIC A and MIC B provide for attachment of DAS	7.1	O.1		Yes [ ] No [ ]
PMD62	MIC M, used with the concentrator function, provide for attachment of SAS to concentrator	7.1	O.1		Yes [ ] No [ ]
PMD63	MIC S provide for attachment of SAS provided for its attachment to concentrator	7.1	O.1		Yes [ ] No [ ]

Index	Variation		Clause	Status	N/A	Support
PMD64	MIC Receptacle	Fibre / Device	7.2	O		Yes [ ] No [ ]
PMD65		Fibre / Fibre	7.2	O		Yes [ ] No [ ]

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