

TECHNICAL REPORT

ISO/IEC
TR 11802-4

IEEE
Std 802.5j

First edition
1994-06-30

Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Technical reports and guidelines —

Part 4:

**Token ring access method and physical layer
specifications — Fibre optic station
attachment**

*Technologies de l'information — Télécommunications et échange
d'information entre systèmes — Réseaux locaux et urbains — Rapports
techniques et directives —*

*Partie 4: Méthode d'accès par anneau à jeton et spécifications pour la
couche physique — Liaison de station à fibres optiques*



Documents
Reference number
ISO/IEC TR 11802-4:1994(E)
IEEE Std 802.5j-1993
IEEE Std 802.5j-1993

Abstract: The functional, electrical, optical, and mechanical characteristics of a fibre optic interface for connecting a 4- or 16-Mbit/s token ring station to the trunk coupling unit of a token ring are specified. This Technical Report is based upon a fibre optic transmitter, a channel of multimode graded-index fibres, and a direct-detection photodiode receiver; and includes signaling provisions for bypass of the station from the ring and self-test capabilities.

Keywords: fibre optic interface (FOI), fibre optic medium interface (FMI), fibre optic station attachment, local area network (LAN), optical receiver (ORX), optical transmitter (OTX), token ring, trunk coupling unit

The Institute of Electrical and Electronics Engineers, Inc.
345 East 47th Street, New York, NY 10017-2394, USA

Copyright © 1994 by the Institute of Electrical and Electronics Engineers, Inc.
All rights reserved. Published 1994. Printed in the United States of America.

ISBN 1-55937-414-4

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

June 30, 1994

Authorized licensed use limited to: Tsinghua University. Downloaded on February 26, 2026 at 05:44:04 UTC from IEEE Xplore. Restrictions apply.

ISO/IEC TR 11802-4 : 1994 (E)
IEEE Std 802.5j-1993
(Issued June 1994 for trial use)

**Information technology—
Telecommunications and information
exchange between systems—
Local and metropolitan area networks—
Technical reports and guidelines—**

**Part 4: Token ring access method and
physical layer specifications—
Fibre optic station attachment**

Sponsor

**Technical Committee on Computer Communications
of the
IEEE Computer Society**

Approved December 2, 1993

IEEE Standards Board



Published by
The Institute of Electrical and Electronics Engineers, Inc.

AVA **Documents**
Document Sharing Hub

Authorized licensed use limited to: Tsinghua University. Downloaded on February 26, 2026 at 05:44:04 UTC from IEEE Xplore. Restrictions apply.

Technical Report ISO/IEC TR 11802-4 : 1994

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.

The main task of technical committees is to prepare International Standards. In exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art," for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC TR 11802-4, which is a Technical Report of type 2, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

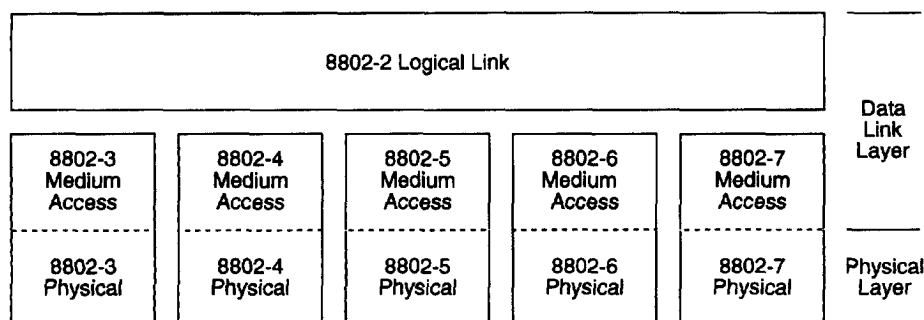


International Organization for Standardization/International Electrotechnical Commission
Case postale 56 • CH-1211 Genève 20 • Switzerland

AVA Documents
Document Sharing Hub

Foreword to Technical Report ISO/IEC TR 11802-4 : 1994

This Technical Report is part of a family of standards for Local and Metropolitan Area Networks. The relationship of the members of the family to each other is shown below. (The numbers in the figure refer to ISO standard numbers.)



This family of standards deals with the physical and data link layers as defined by the ISO Open Systems Interconnection Basic Reference Model (ISO 7498 : 1984). The access standards define five types of medium access technologies and associated physical media, each appropriate for particular applications or system objectives. Other types are under investigation.

The standards defining these technologies are as follows:

- ISO/IEC 8802-3 [ANSI/IEEE Std 802.3, 1993 Edition], a bus utilizing CSMA/CD as the access method.
- ISO/IEC 8802-4 [ANSI/IEEE Std 802.4-1990], a bus utilizing token passing as the access method.
- ISO/IEC 8802-5 [ANSI/IEEE Std 802.5-1992], a ring utilizing token passing as the access method.
- ISO/IEC 8802-6 [ANSI/IEEE Std 802.6, 1994 Edition], a dual bus utilizing distributed queuing as the access method. DQDB subnetworks provide a range of telecommunications services within a metropolitan area.
- ISO 8802-7, a ring utilizing slotted ring as the access method.

ISO 8802-2 [ANSI/IEEE Std 802.2-1989], Logical Link Control protocol, is used in conjunction with the medium access standards.

ISO/IEC 10038 [ANSI/IEEE Std 802.1D, 1993 Edition], *Media access control (MAC) bridges*, specifies an architecture and protocol for the interconnection of IEEE 802 LANs below the level of the logical link control protocol. ISO/IEC 15802-4 [ANSI/IEEE Std 802.1E, 1994 Edition], System Load Protocol, specifies a set of services and protocol for those aspects of management concerned with the loading of systems on IEEE 802 LANs.

The reader of this document is urged to become familiar with the complete family of standards.

IEEE Std 802.5j-1993

IEEE Standards documents are developed within the Technical Committees of the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Board. Members of the committees serve voluntarily and without compensation. They are not necessarily members of the Institute. The standards developed within IEEE represent a consensus of the broad expertise on the subject within the Institute as well as those activities outside of IEEE which have expressed an interest in participating in the development of the standard.

Use of an IEEE Standard is wholly voluntary. The existence of an IEEE Standard does not imply that there are no other ways to produce, test, measure, purchase, market, or provide other goods and services related to the scope of the IEEE Standard. Furthermore, the viewpoint expressed at the time a standard is approved and issued is subject to change brought about through developments in the state of the art and comments received from users of the standard. Every IEEE Standard is subjected to review at least once every five years for revision or reaffirmation. When a document is more than five years old, and has not been reaffirmed, it is reasonable to conclude that its contents, although still of some value, do not wholly reflect the present state of the art. Users are cautioned to check to determine that they have the latest edition of any IEEE Standard.

Comments for revision of IEEE Standards are welcome from any interested party, regardless of membership affiliation with IEEE. Suggestions for changes in documents should be in the form of a proposed change of text, together with appropriate supporting comments.

Interpretations: Occasionally questions may arise regarding the meaning of portions of standards as they relate to specific applications. When the need for interpretations is brought to the attention of IEEE, the Institute will initiate action to prepare appropriate responses. Since IEEE Standards represent a consensus of all concerned interests, it is important to ensure that any interpretation has also received the concurrence of a balance of interests. For this reason IEEE and the members of its technical committees are not able to provide an instant response to interpretation requests except in those cases where the matter has previously received formal consideration.

Comments on standards and requests for interpretations should be addressed to:

Secretary, IEEE Standards Board
345 East 47th Street
New York, NY 10017
USA

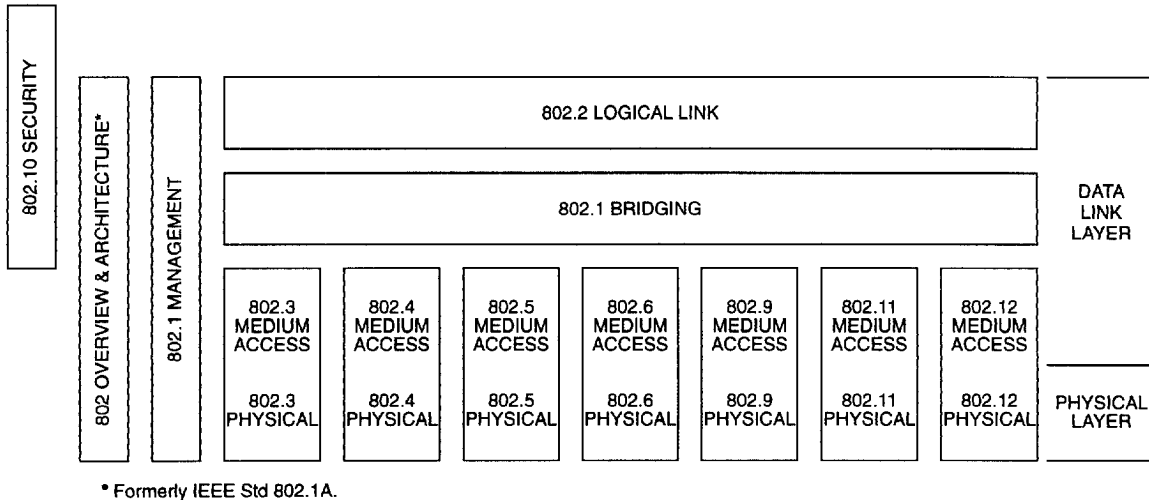
IEEE standards documents may involve the use of patented technology. Their approval by the Institute of Electrical and Electronics Engineers does not mean that using such technology for the purpose of conforming to such standards is authorized by the patent holder. It is the obligation of the user of such technology to obtain all necessary permissions.

Publication of this trial-use standard for comment and criticism has been approved by the Institute of Electrical and Electronics Engineers. Trial-use standards are effective for 24 months from the date of publication. Comments for revision will be accepted for 18 months after publication. Suggestions for revision should be directed to the Secretary, IEEE Standards Board, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, and should be received no later than December 30, 1995. It is expected that following the 24-month period, this trial-use standard, revised as necessary, shall be submitted to the IEEE Standards Board for approval as a full-use standard.

Introduction to IEEE Std 802.5j-1993

(This introduction is not a part of IEEE Std 802.5j-1993, or of ISO/IEC TR 11802-4: 1994.)

This trial-use standard is part of a family of standards for local and metropolitan area networks. The relationship of the members of the family to each other is shown below. (The numbers in the figure refer to IEEE standard numbers.)



This family of standards deals with the Physical and Data Link Layers as defined by the International Organization for Standardization (ISO) Open Systems Interconnection Basic Reference Model (ISO 7498 : 1984). The access standards define several types of medium access technologies and associated physical media, each appropriate for particular applications or system objectives. Other types are under investigation.

The standards defining these technologies are as follows:

- IEEE Std 802[†]: Overview and Architecture. This standard provides an overview to the family of IEEE 802 Standards. This document forms part of the 802.1 scope of work.
- ISO/IEC DIS 15802-2 [IEEE Std 802.1B and 802.1k]: LAN/MAN Management. Defines an Open Systems Interconnection (OSI) management-compatible architecture, and services and protocol elements for use in a LAN/MAN environment for performing remote management.
- ISO/IEC 10038 (ANSI/IEEE Std 802.1D): MAC Bridging. Specifies an architecture and protocol for the interconnection of IEEE 802 LANs below the MAC service boundary.

[†]The 802 Architecture and Overview Specification, originally known as IEEE Std 802.1A, has been renumbered as IEEE Std 802. This has been done to accommodate recognition of the base standard in a family of standards. References to IEEE Std 802.1A should be considered as references to IEEE Std 802.

- ISO/IEC 15802-4 [ANSI/IEEE Std 802.1E]: System Load Protocol. Specifies a set of services and protocol for those aspects of management concerned with the loading of systems on IEEE 802 LANs.
- ISO 8802-2 [ANSI/IEEE Std 802.2]: Logical Link Control
- ISO/IEC 8802-3 [ANSI/IEEE Std 802.3]: CSMA/CD Access Method and Physical Layer Specifications
- ISO/IEC 8802-4 [ANSI/IEEE Std 802.4]: Token Bus Access Method and Physical Layer Specifications
- ISO/IEC 8802-5 [ANSI/IEEE Std 802.5]: Token Ring Access Method and Physical Layer Specifications
- ISO/IEC 8802-6 [ANSI/IEEE Std 802.6]: Distributed Queue Dual Bus Access Method and Physical Layer Specifications
- IEEE Std 802.10: Interoperable LAN/MAN Security, *Currently Contains Secure Data Exchange (SDE)*

In addition to the family of standards, the following is a recommended practice for a common technology:

- IEEE Std 802.7: IEEE Recommended Practice for Broadband Local Area Networks

The following additional working groups have authorized standards projects under development:

- IEEE 802.9 Integrated Services (IS) LAN Interface at the Medium Access Control (MAC) and Physical Layers
- IEEE 802.11 Wireless LAN Medium Access Control (MAC) and Physical Layer Specifications
- IEEE 802.12 Demand Priority Access Method/Physical Layer Specifications

Conformance test methodology

An additional standards series, identified by the number 1802, has been established to identify the conformance test methodology documents for the 802 family of standards. This makes the correspondence between the various 802 standards and their applicable conformance test requirements readily apparent. Thus the conformance test documents for 802.3 are numbered 1802.3, the conformance test documents for 802.5 will be 1802.5, and so on. Similarly, ISO will use 18802 to number conformance test standards for 8802 standards.

IEEE Std 802.5j-1993

This Technical Report generally satisfied the standards developing working group. However, it was felt that more time is needed for industry experts to review fibre as a media for token ring operation. In the opinion of the working group, publication as a trial-use standard is preferred to widespread distribution of unapproved drafts.

Participants

When the IEEE 802.5 Working Group approved IEEE Std 802.5j-1993, it had the following membership:

Robert A. Donnan, Chair
Alan Beardsley, Fibre Optic Attachment Editor

Don Aelmore
Charles Amann
Rey Bautista
Steve Belisle
Philip Brownlee
Patrik Bulteel
Robert R Campbell
James T. Carlo
Hsin-Hwai Chen
Thomas Coradetti
Rick Downs
Hanoch Eldar
Farzin Firoozmand
Gunnar Forsberg
Nathan Fritts
Harry Gold
Tom Gulick
Sharam Hakimi
James Harrer
Carl G. Hayssen
Tricia Hill
Paul Hittel
Tom Hogan
Clarence C. Joh
Arthur D. Jopling

Dave Juhre
Lisa Kelley
Bryan B. Kim
David M. Kollm
William F. Kous
Katie D. Lee
Robert D. Love
Carl Madison
Alan C. Marshall
Kelly P. McClellan
Colin Mick
Arthur Miller
John E. Montague
Steven Moustakas
Bilal Murtaza
Andrew Norton
Brian O'Connell
Dave Pearce
Thanh Pham
Richard Podgalsky
Kirk Preiss
Ivan Reede
Everett O. Rigsbee III
Andrew L. Ringwald

Bob Ross
Jacques A. Roth
Mike Rubera
Howard Rubin
Haig A. Sarkissian
David Sheehy
Marc Shoquist
Somsubhra Sikdar
Raymond Sit
Bob Smith
Robert Snyder
Bob Southard
Louis Stankaitas
Leo Staschover
Ed Sterling
Richard Sweatt
Andre Szczepanek
Hidenori Takahashi
Lars Thernsjo
Scott Thomas
Jeff Tong
Akihisa Toyooka
John Trites
Chang-Jung Wang
Peter Williams

The following persons were on the balloting committee:

William B. Adams
Don Aelmore
Kit Athul
William E. Ayen
George S. Carson
Chih-Tsai Chen
Michael H. Coden
Robert Crowder
Richard Denton
R. A. Donnan
Mitchell Duncan
John E. Emrich
Philip H. Enslow
John W. Fendrich
Hal Folts
Harvey Freeman
Patrick Gonia
Ambuj Goyal
Joseph L. Hammond
J. Scott Haugdahl
Richard Iliff
Raj Jain
Samuel Kho

David M. Kollm
Thomas Kurihara
Anthony B. Lake
Mike Lawler
Lee Jaiyong
F. C. Lim
Randolph Little
William D. Livingston
Donald C. Loughry
Joseph F. P. Luhukay
Darrell B. McIndoe
David S. Millman
Aditya N. Mishra
John E. Montague
Kinji Mori
David J. Morris
Arne A. Nilsson
Charles Oestereich
Young Oh
Thomas L. Phinney
Rafat Pirzada
Udo W. Pooch
Marya S. Repko
John P. Riganati

Gary S. Robinson
Julio Sanz
Ambatipudi R. Sastry
Norman Schneidewind
Adarshpal S. Sethi
D. A. Sheppard
Leo Sintonen
Ind. Alex. Soceanu
Robert K. Southard
John Spragins
Carel M. Stillebroer
Fred Strauss
Efsthios D. Sykas
Daniel Sze
Ahmed Tantawi
Nathan Tobol
David L. Umbaugh
Thomas A. Varetoni
James Vorhies
Don Weir
Michael Willett
George B. Wright
Oren Yuen

When the IEEE Standards Board approved this trial-use standard on December 2, 1993, it had the following membership:

Wallace S. Read, *Chair*

Donald C. Loughry, *Vice Chair*

Andrew G. Salem, *Secretary*

Gilles A. Baril
José A. Berrios de la Paz
Clyde R. Camp
Donald C. Fleckenstein
Jay Forster*
David F. Franklin
Ramiro Garcia
Donald N. Heirman

Jim Isaak
Ben C. Johnson
Walter J. Karplus
Lorraine C. Kevra
E. G. "Al" Kiener
Ivor N. Knight
Joseph L. Koepfinger*
D. N. "Jim" Logothetis

Don T. Michael*
Marco W. Migliaro
L. John Rankine
Arthur K. Reilly
Ronald H. Reimer
Gary S. Robinson
Leonard L. Tripp
Donald W. Zipse

*Member Emeritus

Also included are the following nonvoting IEEE Standards Board liaisons:

Satish K. Aggarwal
James Beall
Richard B. Engelman
David E. Soffrin
Stanley I. Warshaw

Valerie E. Zelenty
IEEE Standards Project Editor