INTERNATIONAL STANDARD

ISO/ IEC/IEEE 8802-3

Third edition
2021-02

AMENDMENT
2022-07

Telecommunications and exchange between information technology systems — Requirements for local and metropolitan area networks —

Part 3: **Standard for Ethernet**

AMENDMENT 10: Maintenance #14: Isolation

Télécommunications et échange entre systèmes informatiques — Exigences pour les réseaux locaux et métropolitains —

Partie 3: Norme pour Ethernet

AMENDEMENT 10: Maintenance n° 14 : Isolation

Reference number
ISO/IEC/IEEE 8802-3:2021/Amd.10:2022(E)

Documents
Document Sharing Hub
© IEEE 2021

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

COPYRIGHT PROTECTED DOCUMENT

© IEEE 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from IEEE at the address below.

Institute of Electrical and Electronics Engineers, Inc
3 Park Avenue, New York
NY 10016-5997, USA

Email: stds.ipr@ieee.org
Website: www.ieee.org

Published in Switzerland

© IEEE 2021 – All rights reserved

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO/IEC documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

IEEE Standards documents are developed within the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association (IEEE-SA) Standards Board. The IEEE develops its standards through a consensus development process, approved by the American National Standards Institute, which brings together volunteers representing varied viewpoints and interests to achieve the final product. Volunteers are not necessarily members of the Institute and serve without compensation. While the IEEE administers the process and establishes rules to promote fairness in the consensus development process, the IEEE does not independently evaluate, test, or verify the accuracy of any of the information contained in its standards.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see https://patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

ISO/IEC/IEEE 8802-3:2021/Amd 10 was prepared by the LAN/MAN of the IEEE Computer Society (as IEEE 802.3cr™-2021) and drafted in accordance with its editorial rules. It was adopted, under the "fast-track procedure" defined in the Partner Standards Development Organization cooperation agreement between ISO and IEEE, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems.*

A list of all parts in the ISO/IEC/IEEE 8802 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

© IEEE 2021 – All rights reserved

Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

IEEE Std 802.3cr™-2021
(Amendment to IEEE Std 802.3™-2018
as amended by IEEE Std 802.3cb™-2018,
IEEE Std 802.3bt™-2018,
IEEE Std 802.3cd™-2018,
IEEE Std 802.3cn™-2019,
IEEE Std 802.3cg™-2019,
IEEE Std 802.3cq™-2020,
IEEE Std 802.3cm™-2020,
IEEE Std 802.3ch™-2020,
and IEEE Std 802.3ca™-2020)

IEEE Standard for Ethernet

Amendment 10: Maintenance #14: Isolation

Developed by the

LAN/MAN Standards Committee
of the
IEEE Computer Society

Approved 9 February 2021

IEEE SA Standards Board

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

Abstract: This amendment to IEEE Std 802.3-2018 replaces references to the IEC 60950 series of standards with appropriate references to the IEC 62368 series and makes appropriate changes to the standard corresponding to the new references.

Keywords: Ethernet, IEC 60950, IEC 62368, IEEE 802.3™, IEEE 802.3cr™, isolation, safety

The Institute of Electrical and Electronics Engineers, Inc.
3 Park Avenue, New York, NY 10016-5997, USA

Copyright © 2021 by The Institute of Electrical and Electronics Engineers, Inc.
All rights reserved. Published 24 February 2021. Printed in the United States of America.

IEEE and 802 are registered trademarks in the U.S. Patent & Trademark Office, owned by The Institute of Electrical and Electronics Engineers, Incorporated.

PDF: ISBN 978-1-5044-7381-1 STD24601
Print: ISBN 978-1-5044-7382-8 STDPD24601

IEEE prohibits discrimination, harassment and bullying.

For more information, visit http://www.ieee.org/web/aboutus/whatis/policies/p9-26.html.

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.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

Important Notices and Disclaimers Concerning IEEE Standards Documents

IEEE Standards documents are made available for use subject to important notices and legal disclaimers. These notices and disclaimers, or a reference to this page (https://standards.ieee.org/ipr/disclaimers.html), appear in all standards and may be found under the heading "Important Notices and Disclaimers Concerning IEEE Standards Documents."

Notice and Disclaimer of Liability Concerning the Use of IEEE Standards Documents

IEEE Standards documents are developed within the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association (IEEE SA) Standards Board. IEEE develops its standards through an accredited consensus development process, which brings together volunteers representing varied viewpoints and interests to achieve the final product. IEEE Standards are documents developed by volunteers with scientific, academic, and industry-based expertise in technical working groups. Volunteers are not necessarily members of IEEE or IEEE SA, and participate without compensation from IEEE. While IEEE administers the process and establishes rules to promote fairness in the consensus development process, IEEE does not independently evaluate, test, or verify the accuracy of any of the information or the soundness of any judgments contained in its standards.

IEEE makes no warranties or representations concerning its standards, and expressly disclaims all warranties, express or implied, concerning this standard, including but not limited to the warranties of merchantability, fitness for a particular purpose and non-infringement. In addition, IEEE does not warrant or represent that the use of the material contained in its standards is free from patent infringement. IEEE Standards documents are supplied "AS IS" and "WITH ALL FAULTS."

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.

In publishing and making its standards available, IEEE is not suggesting or rendering professional or other services for, or on behalf of, any person or entity, nor is IEEE undertaking to perform any duty owed by any other person or entity to another. Any person utilizing any IEEE Standards document, should rely upon his or her own independent judgment in the exercise of reasonable care in any given circumstances or, as appropriate, seek the advice of a competent professional in determining the appropriateness of a given IEEE standard.

IN NO EVENT SHALL IEEE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO: THE NEED TO PROCURE SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE PUBLICATION, USE OF, OR RELIANCE UPON ANY STANDARD, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE AND REGARDLESS OF WHETHER SUCH DAMAGE WAS FORESEEABLE.

Translations

The IEEE consensus development process involves the review of documents in English only. In the event that an IEEE standard is translated, only the English version published by IEEE is the approved IEEE standard.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

Official statements

A statement, written or oral, that is not processed in accordance with the IEEE SA Standards Board Operations Manual shall not be considered or inferred to be the official position of IEEE or any of its committees and shall not be considered to be, nor be relied upon as, a formal position of IEEE. At lectures, symposia, seminars, or educational courses, an individual presenting information on IEEE standards shall make it clear that the presenter's views should be considered the personal views of that individual rather than the formal position of IEEE, IEEE SA, the Standards Committee, or the Working Group.

Comments on standards

Comments for revision of IEEE Standards documents are welcome from any interested party, regardless of membership affiliation with IEEE or IEEE SA. However, **IEEE does not provide interpretations, consulting information, or advice pertaining to IEEE Standards documents**.

Suggestions for changes in documents should be in the form of a proposed change of text, together with appropriate supporting comments. Since IEEE standards represent a consensus of concerned interests, it is important that any responses to comments and questions also receive the concurrence of a balance of interests. For this reason, IEEE and the members of its Societies and Standards Coordinating Committees are not able to provide an instant response to comments, or questions except in those cases where the matter has previously been addressed. For the same reason, IEEE does not respond to interpretation requests. Any person who would like to participate in evaluating comments or in revisions to an IEEE standard is welcome to join the relevant IEEE working group. You can indicate interest in a working group using the Interests tab in the Manage Profile & Interests area of the IEEE SA myProject system. An IEEE Account is needed to access the application.

Comments on standards should be submitted using the Contact Us form.

Laws and regulations

Users of IEEE Standards documents should consult all applicable laws and regulations. Compliance with the provisions of any IEEE Standards document does not constitute compliance to any applicable regulatory requirements. Implementers of the standard are responsible for observing or referring to the applicable regulatory requirements. IEEE does not, by the publication of its standards, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Data privacy

Users of IEEE Standards documents should evaluate the standards for considerations of data privacy and data ownership in the context of assessing and using the standards in compliance with applicable laws and regulations.

Copyrights

IEEE draft and approved standards are copyrighted by IEEE under US and international copyright laws. They are made available by IEEE and are adopted for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of engineering practices and methods. By making these documents available for use and adoption by public authorities and private users, IEEE does not waive any rights in copyright to the documents.

Photocopies

Subject to payment of the appropriate licensing fees, IEEE will grant users a limited, non-exclusive license to photocopy portions of any individual standard for company or organizational internal use or individual, non-commercial use only. To arrange for payment of licensing fees, please contact Copyright Clearance Center, Customer Service, 222 Rosewood Drive, Danvers, MA 01923 USA; +1 978 750 8400; https://www.copyright.com/. Permission to photocopy portions of any individual standard for educational classroom use can also be obtained through the Copyright Clearance Center.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

Updating of IEEE Standards documents

Users of IEEE Standards documents should be aware that these documents may be superseded at any time by the issuance of new editions or may be amended from time to time through the issuance of amendments, corrigenda, or errata. An official IEEE document at any point in time consists of the current edition of the document together with any amendments, corrigenda, or errata then in effect.

Every IEEE standard is subjected to review at least every 10 years. When a document is more than 10 years old and has not undergone a revision process, 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.

In order to determine whether a given document is the current edition and whether it has been amended through the issuance of amendments, corrigenda, or errata, visit IEEE Xplore or contact IEEE. For more information about the IEEE SA or IEEE's standards development process, visit the IEEE SA Website.

Errata

Errata, if any, for all IEEE standards can be accessed on the IEEE SA Website. Search for standard number and year of approval to access the web page of the published standard. Errata links are located under the Additional Resources Details section. Errata are also available in IEEE Xplore. Users are encouraged to periodically check for errata.

Patents

IEEE Standards are developed in compliance with the IEEE SA Patent Policy.

Attention is called to the possibility that implementation of this standard may require use of subject matter covered by patent rights. By publication of this standard, no position is taken by the IEEE with respect to the existence or validity of any patent rights in connection therewith. If a patent holder or patent applicant has filed a statement of assurance via an Accepted Letter of Assurance, then the statement is listed on the IEEE SA Website at https://standards.ieee.org/about/sasb/patcom/patents.html. Letters of Assurance may indicate whether the Submitter is willing or unwilling to grant licenses under patent rights without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination to applicants desiring to obtain such licenses.

Essential Patent Claims may exist for which a Letter of Assurance has not been received. The IEEE is not responsible for identifying Essential Patent Claims for which a license may be required, for conducting inquiries into the legal validity or scope of Patents Claims, or determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance, if any, or in any licensing agreements are reasonable or non-discriminatory. Users of this standard are expressly advised that determination of the validity of any patent rights, and the risk of infringement of such rights, is entirely their own responsibility. Further information may be obtained from the IEEE Standards Association.

IMPORTANT NOTICE

IEEE Standards do not guarantee or ensure safety, security, health, or environmental protection, or ensure against interference with or from other devices or networks. IEEE Standards development activities consider research and information presented to the standards development group in developing any safety recommendations. Other information about safety practices, changes in technology or technology implementation, or impact by peripheral systems also may be pertinent to safety considerations during implementation of the standard. Implementers and users of IEEE Standards documents are responsible for determining and complying with all appropriate safety, security, environmental, health, and interference protection practices and all applicable laws and regulations.

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

Participants

The following individuals were officers and members of the IEEE 802.3 Working Group at the beginning of the IEEE P802.3cr Working Group ballot:

David J. Law, *IEEE 802.3 Working Group Chair*
Adam Healey, *IEEE 802.3 Working Group Vice-Chair*
Jon Lewis, *IEEE 802.3 Working Group Secretary*
Steven B. Carlson, *IEEE 802.3 Working Group Executive Secretary*
Valerie Maguire, *IEEE 802.3 Working Group Treasurer*

Jon Lewis, *IEEE P802.3cr Maintenance #14: Isolation Task Force Chair and Editor*

David Abramson
Pete Anslow
Michikazu Aono
Nobuyasu Araki
Tim Baggett
Thananya Baldwin
Steven Baumgartner
Denis Beaudoin
Gitesh Bhagwat
Rich Boyer
David Brandt
Ralf-Peter Braun
Theodore Brillhart
Paul Brooks
Matthew Brown
Jairo Bustos Heredia
Adrian Butter
Clark Carty
David Chalupsky
Jacky Chang
Xin Chang
Chan Chen
Golam Choudhury
Keng Hua Chuang
John D'Ambrosia
Piers Dawe
Fred Dawson
Gerrit den Besten
Claudio DeSanti
Curtis Donahue
Liang Du
Kathryn Dube
Frank Effenberger
David Estes
John Ewen
Vincent Ferretti
Brian Franchuk
Matthias Fritsche
Takashi Fukuoka
Ali Ghiasi
Joel Goergen
Steven Gorshe
Hideki Goto
Steffen Graber
Olaf Grau
Robert Grow
Martin Gubow
Mark Gustlin
Marek Hajduczenia
Howard Heck
Brian Holden
Bernd Horrmeyer
Yasuhiro Hyakutake
Jonathan Ingham
Kazuhiko Ishibe
Hideki Isono
Tom Issenhuth
Hiroaki Ito
Kenneth Jackson
Andrew Jimenez
John Johnson
Chad Jones
Peter Jones
Lokesh Kabra
Haysam Kadry
Manabu Kagami
Upen Kareti
Athanasios Kasapi
Yong Kim
Mark Kimber
Michael Klempa
Curtis Knittle
Elizabeth Kochuparambil
Sam Kocsis
Wojciech Koczwara
Paul Kolesar
Taiji Kondo
Daniel Koppermueller
Glen Kramer
Taketo Kumada
Hans Lackner
Frank Lambrecht
Mark Laubach
Greg Le Cheminant
Jon Lewis
Mike-Peng Li
Alex Lin
Hai-Feng Liu
William Lo
Kent Lusted
Jeffery Maki
David Malicoat
Eric Maniloff
Flavio Marques
Arthur Marris
Takeo Masuda
Mick McCarthy
Brett McClellan
Larry McMillan
Richard Mellitz
Shimon Muller
James Nadolny
Edward Nakamoto
Paul Neveux
Gary Nicholl
Shawn Nicholl
Kevin Noll
Mark Nowell
David Ofelt
Ryo Okabe
Tom Palkert
Carlos Pardo
Earl Parsons
Gerald Pepper
David Piehler
Fabio Pittala
Christopher Pohl
William Powell
Rick Rabinovich
Parthasarathy Raju
Adee Ran
Alon Regev
Duane Remein
Victor Renteria
Thomas Rettig
Hamid Salehi
Sam Sambasivan
Edward Sayre
Matthew Schmitt
Hossein Sedarat
Masood Shariff
Masato Shiino
Ramin Shirani
Kapil Shrikhande
Jeff Slavick
Scott Sommers
Edward Sprague
Peter Stassar
Heath Stewart
Junqing Sun
Steve Swanson
Tomoo Takahara
Satoshi Takahashi
Tadashi Takahashi

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

Kazuya Takayama
Michael Takefman
Masaru Terada
Geoffrey Thompson
Pirooz Tooyserkani
Nathan Tracy
David Tremblay
Stephen Trowbridge
Mike Tu
Ed Ulrichs
Alexander Umnov
Edward Walter
Roy Wang
Xuehuan Wang
Dong Wei
Matthias Wendt
Natalie Wienckowski
Dance Wu
Peter Wu
Dayin Xu
Yu Xu
Lennart Yseboodt
Conrad Zerna
Xingxin Zhang
Chunhui Zhu
Yan Zhuang
Martin Zielinski
George Zimmerman

The following members of the individual balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

Robert Aiello
Thomas Alexander
Rich Boyer
Ralf-Peter Braun
Theodore Brillhart
Jairo Bustos Heredia
William Byrd
Steven B. Carlson
Juan Carreon
Clark Carty
Pin Chang
Chan Chen
Avraham Freedman
Matthias Fritsche
Robert Grow
Stephen Haddock
Marek Hajduczenia
Adam Healey
Marco Hernandez
David Hess
Werner Hoelzl
Gergely Huszak
Yasuhiro Hyakutake
Peter Jones
Lokesh Kabra
Piotr Karocki
Stuart Kerry
Yong Kim
Taiji Kondo
Mark Laubach
David J. Law
Hyeong Ho Lee
Jon Lewis
Michael Lynch
Valerie Maguire
Jeffery Maki
Michael Maytum
Brett McClellan
Jonathon Mclendon
Richard Mellitz
Tremont Miao
Nick S.A. Nikjoo
Paul Nikolich
Satoshi Obara
Bansi Patel
Adee Ran
R. K. Rannow
Robert Robinson
Toshiaki Sakai
Frank Schewe
Heath Stewart
Mitsutoshi Sugawara
Geoffrey Thompson
Michael Thompson
David Tremblay
Mark-Rene Uchida
George Vlantis
Lisa Ward
Keith Waters
James Weaver
Karl Weber
Matthias Wendt
Natalie Wienckowski
Scott Willy
Chun Yu Charles Wong
Peter Wu
James Young
Yu Yuan
Oren Yuen
George Zimmerman

When the IEEE SA Standards Board approved this standard on 9 February 2021, it had the following membership:

Gary Hoffman, *Chair*
Vacant Position, *Vice Chair*
John D. Kulick, *Past Chair*
Konstantinos Karachalios, *Secretary*

Edward A. Addy
Doug Edwards
Ramy Ahmed Fathy
J. Travis Griffith
Joseph L. Koepfinger*
Thomas Koshy
David J. Law
Howard Li
Daozhuang Lin
Kevin Lu
Daleep C. Mohla
Chenhui Niu
Damir Novosel
Annette Reilly
Jon Walter Rosdahl
Dorothy Stanley
Mehmet Ulema
Lei Wang
F. Keith Waters
Karl Weber
Sha Wei
Howard Wolfman
Daidi Zhong

*Member Emeritus

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

Introduction

This introduction is not part of IEEE Std 802.3cr-2021, IEEE Standard for Ethernet. Amendment 10: Maintenance #14: Isolation.

IEEE Std 802.3™ was first published in 1985. Since the initial publication, many projects have added functionality or provided maintenance updates to the specifications and text included in the standard. Each IEEE 802.3 project/amendment is identified with a suffix (e.g., IEEE Std 802.3ba™-2010).

The half duplex Media Access Control (MAC) protocol specified in IEEE Std 802.3-1985 is Carrier Sense Multiple Access with Collision Detection (CSMA/CD). This MAC protocol was key to the experimental Ethernet developed at Xerox Palo Alto Research Center, which had a 2.94 Mb/s data rate. Ethernet at 10 Mb/s was jointly released as a public specification by Digital Equipment Corporation (DEC), Intel and Xerox in 1980. Ethernet at 10 Mb/s was approved as an IEEE standard by the IEEE Standards Board in 1983 and subsequently published in 1985 as IEEE Std 802.3-1985. Since 1985, new media options, new speeds of operation, and new capabilities have been added to IEEE Std 802.3. A full duplex MAC protocol was added in 1997.

Some of the major additions to IEEE Std 802.3 are identified in the marketplace with their project number. This is most common for projects adding higher speeds of operation or new protocols. For example, IEEE Std 802.3u™ added 100 Mb/s operation (also called Fast Ethernet), IEEE Std 802.3z added 1000 Mb/s operation (also called Gigabit Ethernet), IEEE Std 802.3ae added 10 Gb/s operation (also called 10 Gigabit Ethernet), IEEE Std 802.3ah™ specified access network Ethernet (also called Ethernet in the First Mile) and IEEE Std 802.3ba added 40 Gb/s operation (also called 40 Gigabit Ethernet) and 100 Gb/s operation (also called 100 Gigabit Ethernet). These major additions are all now included in and are superseded by IEEE Std 802.3-2018 and are not maintained as separate documents.

At the date of IEEE Std 802.3cr-2021 publication, IEEE Std 802.3 was composed of the following documents:

IEEE Std 802.3-2018

Section One—Includes Clause 1 through Clause 20 and Annex A through Annex H and Annex 4A. Section One includes the specifications for 10 Mb/s operation and the MAC, frame formats and service interfaces used for all speeds of operation.

Section Two—Includes Clause 21 through Clause 33 and Annex 22A through Annex 33E. Section Two includes management attributes for multiple protocols and speed of operation as well as specifications for providing power over twisted pair cabling for multiple operational speeds. It also includes general information on 100 Mb/s operation as well as most of the 100 Mb/s Physical Layer specifications.

Section Three—Includes Clause 34 through Clause 43 and Annex 36A through Annex 43C. Section Three includes general information on 1000 Mb/s operation as well as most of the 1000 Mb/s Physical Layer specifications.

Section Four—Includes Clause 44 through Clause 55 and Annex 44A through Annex 55B. Section Four includes general information on 10 Gb/s operation as well as most of the 10 Gb/s Physical Layer specifications.

Section Five—Includes Clause 56 through Clause 77 and Annex 57A through Annex 76A. Clause 56 through Clause 67 and Clause 75 through Clause 77, as well as associated annexes, specify subscriber access and other Physical Layers and sublayers for operation from 512 kb/s to 10 Gb/s, and defines

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

services and protocol elements that enable the exchange of IEEE Std 802.3 format frames between stations in a subscriber access network. Clause 68 specifies a 10 Gb/s Physical Layer specification. Clause 69 through Clause 74 and associated annexes specify Ethernet operation over electrical backplanes at speeds of 1000 Mb/s and 10 Gb/s.

Section Six—Includes Clause 78 through Clause 95 and Annex 83A through Annex 93C. Clause 78 specifies Energy-Efficient Ethernet. Clause 79 specifies IEEE 802.3 Organizationally Specific Link Layer Discovery Protocol (LLDP) type, length, and value (TLV) information elements. Clause 80 through Clause 95 and associated annexes include general information on 40 Gb/s and 100 Gb/s operation as well the 40 Gb/s and 100 Gb/s Physical Layer specifications. Clause 90 specifies Ethernet support for time synchronization protocols.

Section Seven—Includes Clause 96 through Clause 115 and Annex 97A through Annex 115A. Clause 96 through Clause 98, Clause 104, and associated annexes, specify Physical Layers and optional features for 100 Mb/s and 1000 Mb/s operation over a single twisted pair. Clause 100 through Clause 103, as well as associated annexes, specify Physical Layers for the operation of the EPON protocol over coaxial distribution networks. Clause 105 through Clause 114 and associated annexes include general information on 25 Gb/s operation as well as 25 Gb/s Physical Layer specifications. Clause 99 specifies a MAC merge sublayer for the interspersing of express traffic. Clause 115 and its associated annex specify a Physical Layer for 1000 Mb/s operation over plastic optical fiber.

Section Eight—Includes Clause 116 through Clause 126 and Annex 119A through Annex 120E. Clause 116 through Clause 124 and associated annexes include general information on 200 Gb/s and 400 Gb/s operation as well the 200 Gb/s and 400 Gb/s Physical Layer specifications. Clause 125 and Clause 126 include general information on 2.5 Gb/s and 5 Gb/s operation as well as 2.5 Gb/s and 5 Gb/s Physical Layer specifications.

IEEE Std 802.3cb™-2018

Amendment 1—This amendment includes changes to IEEE Std 802.3-2018 and its amendments, and adds Clause 127 through Clause 130, Annex 127A, Annex 128A, Annex 128B, and Annex 130A. This amendment adds new Physical Layers for operation at 2.5 Gb/s and 5 Gb/s over electrical backplanes.

IEEE Std 802.3bt™-2018

Amendment 2—This amendment includes changes to IEEE Std 802.3-2018 and adds Clause 145, Annex 145A, Annex 145B, and Annex 145C. This amendment adds power delivery using all four pairs in the structured wiring plant, resulting in greater power being available to end devices. This amendment also allows for lower standby power consumption in end devices and adds a mechanism to better manage the available power budget.

IEEE Std 802.3cd™-2018

Amendment 3—This amendment includes changes to IEEE Std 802.3-2018 and adds Clause 131 through Clause 140 and Annex 135A through Annex 136D. This amendment adds MAC parameters, Physical Layers, and management parameters for the transfer of IEEE 802.3 format frames at 50 Gb/s, 100 Gb/s, and 200 Gb/s.

IEEE Std 802.3cn™-2019

Amendment 4—This amendment includes changes to IEEE Std 802.3-2018 and adds 50 Gb/s, 200 Gb/s, and 400 Gb/s Physical Layer specifications and management parameters for operation over single-mode fiber with reaches of at least 40 km.

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

IEEE Std 802.3cg™-2019

Amendment 5—This amendment includes changes to IEEE Std 802.3-2018 and its amendments and adds Clause 146 through Clause 148 and Annex 146A and Annex 146B. This amendment adds 10 Mb/s Physical Layer specifications and management parameters for operation on a single balanced pair of conductors.

IEEE Std 802.3cq™-2020

Amendment 6—This amendment includes editorial and technical corrections, refinements, and clarifications to Clause 33 and related portions of the standard.

IEEE Std 802.3cm™-2020

Amendment 7—This amendment includes changes to IEEE Std 802.3-2018 and adds Clause 150. This amendment adds Physical Layer (PHY) specifications and management parameters for 400 Gb/s operation on four pairs (400GBASE-SR4.2) and eight pairs (400GBASE-SR8) of multimode fiber, over reaches of at least 100 m.

IEEE Std 802.3ch™-2020

Amendment 8—This amendment includes changes to IEEE Std 802.3-2018 and adds Clause 149, Annex 149A, Annex 149B, and Annex 149C. This amendment adds physical layer specifications and management parameters for operation at 2.5 Gb/s, 5 Gb/s, and 10 Gb/s over a single balanced pair of conductors.

IEEE Std 802.3ca™-2020

Amendment 9—This amendment to IEEE Std 802.3-2018 extends the operation of Ethernet passive optical networks (EPONs) to multiple channels of 25 Gb/s providing both symmetric and asymmetric operation for the following data rates (downstream/upstream): 25/10 Gb/s, 25/25 Gb/s, 50/10 Gb/s, 50/25 Gb/s, and 50/50 Gb/s. This amendment specifies the 25 Gb/s EPON Multi-Channel Reconciliation Sublayer (MCRS), Nx25G-EPON Physical Coding Sublayers (PCSs), Physical Media Attachment (PMA) sublayers, and Physical Medium Dependent (PMD) sublayers that support both symmetric and asymmetric data rates while maintaining backward compatibility with already deployed 10 Gb/s EPON equipment. The EPON operation is defined for distances of at least 20 km, and for a split ratio of at least 1:32.

IEEE Std 802.3cr™-2021

Amendment 10—This amendment includes changes to IEEE Std 802.3-2018 and adds Annex J. This amendment replaces references to the IEC 60950 series of standards (including IEC 60950-1 “Information technology equipment—Safety—Part 1: General requirements”) with appropriate references to the IEC 62368 “Audio/video, information and communication technology equipment” series and makes appropriate changes to the standard corresponding to the new references.

Two companion documents exist, IEEE Std 802.3.1 and IEEE Std 802.3.2. IEEE Std 802.3.1 describes Ethernet management information base (MIB) modules for use with the Simple Network Management Protocol (SNMP). IEEE Std 802.3.2 describes YANG data models for Ethernet. IEEE Std 802.3.1 and IEEE Std 802.3.2 are updated to add management capability for enhancements to IEEE Std 802.3 after approval of those enhancements.

IEEE Std 802.3 will continue to evolve. New Ethernet capabilities are anticipated to be added within the next few years as amendments to this standard.

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

Contents

1. Introduction 23

1.3 Normative references 23

8. Medium Attachment Unit and baseband medium specifications, type 10BASE5 24

8.3 MAU–medium electrical characteristics 24
8.3.2 MAU electrical characteristics 24
8.3.2.1 Electrical isolation 24
8.7 Environmental specifications 24
8.7.1 General safety requirements 24
8.8 Protocol implementation conformance statement (PICS) proforma for Clause 8, Medium Attachment Unit and baseband medium specifications, type 10BASE5 25
8.8.6 PICS proforma tables for MAU 25
8.8.6.8 MAU electrical characteristics 25
8.8.6.11 Safety requirements 26

9. Repeater unit for 10 Mb/s baseband networks 27

9.9 Medium attachment unit and baseband medium specification for a vendor-independent FOIRL 27
9.9.3 FOMAU electrical characteristics 27
9.9.3.1 Electrical isolation 27

10. Medium attachment unit and baseband medium specifications, type 10BASE2 28

10.8 Environmental specifications 28
10.8.3 Regulatory requirements 28

12. Physical signaling, medium attachment, and baseband medium specifications, type 1BASE5 29

12.10 Safety 29
12.10.1 Isolation 29

14. Twisted-pair medium attachment unit (MAU) and baseband medium, type 10BASE-T including type 10BASE-Te 30

14.3 MAU electrical specifications 30
14.3.1 MAU-to-MDI interface characteristics 30
14.3.1.1 ~~Isolation requirement~~Electrical isolation 30
14.7 Environmental specifications 30
14.7.1 General safety 30
14.10 Protocol implementation conformance statement (PICS) proforma for Clause 14, Twisted-pair medium attachment unit (MAU) and baseband medium, type 10BASE-T and type 10BASE-Te 30
14.10.4 PICS proforma for 10BASE-T 30
14.10.4.5 PICS proforma tables for MAU 30
14.10.4.5.11 ~~Isolation requirements~~Electrical isolation 30
14.10.4.5.15 Safety requirements 31

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

15. Fiber optic medium and common elements of medium attachment units and star, type 10BASE-F 32

15.3 Characteristics of the fiber optic medium 32
15.3.4 Electrical isolation 32
15.8 Protocol implementation conformance statement (PICS) proforma for Clause 15, Fiber optic medium and common elements of medium attachment units and star, type 10BASE-F 33
15.8.6 PICS Proforma for the fiber optic medium 33
15.8.6.4 Electrical isolation requirements 33

23. Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 100BASE-T4 34

23.5 PMA electrical specifications 34
23.5.1 PMA-to-MDI interface characteristics 34
23.5.1.1 Isolation requirement 34
23.9 Environmental specifications 34
23.9.1 General safety 34

25. Physical Medium Dependent (PMD) sublayer and baseband medium, type 100BASE-TX 35

25.4 Specific requirements and exceptions 35
25.4.6 Replacement of 8.4.1, “UTP isolation requirements” 35
25.6 Protocol implementation conformance statement (PICS) proforma for Clause 25, Physical Medium Dependent (PMD) sublayer and baseband medium, type 100BASE-TX 36
25.6.4 PICS proforma tables for the Physical Medium Dependent (PMD) sublayer and baseband medium, type 100BASE-TX 36
25.6.4.2 PMD compliance 36

27. Repeater for 100 Mb/s baseband networks 37

27.5 Environmental specifications 37
27.5.1 General safety 37

32. Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 100BASE-T2 38

32.6 PMA electrical specifications 38
32.6.1 PMA-to-MDI interface characteristics 38
32.6.1.1 Isolation requirement 38
32.10 Environmental specifications 38
32.10.1 General safety 38

33. Power over Ethernet over 2 Pairs 39

33.4 Additional electrical specifications 39
33.4.1 Electrical isolation 39
33.7 Environmental 39
33.7.1 General safety 39
33.8 Protocol implementation conformance statement (PICS) proforma for Clause 33, Power over Ethernet over 2 Pairs 40
33.8.3 PICS proforma tables for Power over Ethernet over 2 Pairs 40
33.8.3.4 Electrical specifications applicable to the PSE and PD 40

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

33.8.3.9 Environmental specifications applicable to PSEs and PDs 40
33.8.3.10 Environmental specifications applicable to the PSE 41

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (long wavelength laser) and 1000BASE-SX (short wavelength laser) 42

38.7 Environmental specifications 42
38.7.1 General safety 42
38.12 Protocol implementation conformance statement (PICS) proforma for Clause 38, Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser) 43
38.12.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser) 43
38.12.4.5 Optical measurement requirements 43

40. Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 1000BASE-T 44

40.6 PMA electrical specifications 44
40.6.1 PMA-to-MDI interface tests 44
40.6.1.1 ~~Isolation requirement~~Electrical isolation 44
40.9 Environmental specifications 44
40.9.1 General safety 44
40.12 Protocol implementation conformance statement (PICS) proforma for Clause 40—Physical coding sublayer (PCS), physical medium attachment (PMA) sublayer and baseband medium, type 1000BASE-T 45
40.12.7 PMA Electrical Specifications 45
40.12.10 General safety and environmental requirements 46

41. Repeater for 1000 Mb/s baseband networks 47

41.4 Environmental specifications 47
41.4.1 General safety 47

52. Physical Medium Dependent (PMD) sublayer and baseband medium, type 10GBASE-S (short wavelength serial), 10GBASE-L (long wavelength serial), and 10GBASE-E (extra long wavelength serial) 48

52.10 Environmental specifications 48
52.10.1 General safety 48
52.15 Protocol implementation conformance statement (PICS) proforma for Clause 52, Physical Medium Dependent (PMD) sublayer and baseband medium, type 10GBASE-S (short wavelength serial), 10GBASE-L (long wavelength serial), and 10GBASE-E (extra long wavelength serial) 49
52.15.3 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and baseband medium, types 10GBASE-R and 10GBASE-W 49
52.15.3.11 Environmental specifications 49

53. Physical Medium Dependent (PMD) sublayer and baseband medium, type 10GBASE-LX4 50

53.10 Environmental specifications 50
53.10.1 General safety 50

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

53.15 Protocol implementation conformance statement (PICS) proforma for Clause 53, Physical Medium Dependent (PMD) sublayer and baseband medium, type 10GBASE-LX4 51
53.15.4 PICS proforma tables for 10GBASE-LX4 and baseband medium 51
53.15.4.5 Optical measurement requirements 51

55. Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 10GBASE-T 52

55.5 PMA electrical specifications 52
55.5.1 ~~Isolation requirement~~Electrical isolation 52
55.9 Environmental specifications 52
55.9.1 General safety 52
55.12 Protocol implementation conformance statement (PICS) proforma for Clause 55—Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 10GBASE-T 53
55.12.6 PMA electrical specifications 53
55.12.9 General safety and environmental requirements 53

58. Physical Medium Dependent (PMD) sublayer and medium, type 100BASE-LX10 (Long Wavelength) and 100BASE-BX10 (Bi-Directional Long Wavelength) 54

58.8 Environmental, safety, and labeling 54
58.8.1 General safety 54
58.10 Protocol implementation conformance statement (PICS) proforma for Clause 58, Physical Medium Dependent (PMD) sublayer and medium, type 100BASE-LX10 (Long Wavelength) and 100BASE-BX10 (Bi-Directional Long Wavelength) 55
58.10.3 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 100BASE-LX10 and 100BASE-BX10 55
58.10.3.6 Environmental specifications 55

59. Physical Medium Dependent (PMD) sublayer and medium, type 1000BASE-LX10 (Long Wavelength) and 1000BASE-BX10 (Bi-Directional Long Wavelength) 56

59.8 Environmental, safety, and labeling specifications 56
59.8.1 General safety 56
59.10 Protocol implementation conformance statement (PICS) proforma for Clause 59, Physical Medium Dependent (PMD) sublayer and medium, type 1000BASE-LX10 (Long Wavelength) and 1000BASE-BX10 (Bi-Directional Long Wavelength) 57
59.10.3 Major capabilities/options 57
59.10.3.6 Environmental, safety, and labeling specifications 57

60. Physical Medium Dependent (PMD) sublayer and medium, type 1000BASE-PX (long wavelength passive optical networks) 58

60.10 Environmental, safety, and labeling 58
60.10.1 General safety 58
60.12 Protocol implementation conformance statement (PICS) proforma for Clause 60, Physical Medium Dependent (PMD) sublayer and medium, type 1000BASE-PX (long wavelength passive optical networks) 59
60.12.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 1000BASE-PX (long wavelength passive optical networks) 59
60.12.4.12 Environmental specifications 59

70. Physical Medium Dependent sublayer and baseband medium, type 1000BASE-KX 60

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

70.9 Environmental specifications ... 60
70.9.1 General safety ... 60
70.10 Protocol implementation conformance statement (PICS) proforma for Clause 70, Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-KX ... 61
70.10.4 PICS proforma tables for Clause 70, Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-KX ... 61
70.10.4.5 Environmental and safety specifications ... 61

71. Physical Medium Dependent sublayer and baseband medium, type 10GBASE-KX4 ... 62

71.9 Environmental specifications ... 62
71.9.1 General safety ... 62
71.10 Protocol implementation conformance statement (PICS) proforma for Clause 71, Physical Medium Dependent (PMD) sublayer and baseband medium, type 10GBASE-KX4 ... 63
71.10.4 PICS proforma tables for Clause 71, Physical Medium Dependent (PMD) sublayer and baseband medium, type 10GBASE-KX4 ... 63
71.10.4.6 Environmental and safety specifications ... 63

72. Physical Medium Dependent sublayer and baseband medium, type 10GBASE-KR ... 64

72.9 Environmental specifications ... 64
72.9.1 General safety ... 64
72.10 Protocol implementation conformance statement (PICS) proforma for Clause 72, Physical Medium Dependent (PMD) sublayer and baseband medium, type 10GBASE-KR ... 65
72.10.4 PICS proforma tables for Clause 72, Physical Medium Dependent (PMD) sublayer and baseband medium, type 10GBASE-KR ... 65
72.10.4.7 Environmental specifications ... 65

75. Physical Medium Dependent (PMD) sublayer and medium for passive optical networks, type 10GBASE–PR and 10/1GBASE–PRX ... 66

75.8 Environmental, safety, and labeling ... 66
75.8.1 General safety ... 66
75.10 Protocol implementation conformance statement (PICS) proforma for Clause 75, Physical Medium Dependent (PMD) sublayer and medium for passive optical networks, type 10GBASE–PR and 10/1GBASE–PRX ... 67
75.10.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium for passive optical networks, type 10GBASE–PR and 10/1GBASE–PRX ... 67
75.10.4.19 Environmental specifications ... 67

84. Physical Medium Dependent sublayer and baseband medium, type 40GBASE-KR4 ... 68

84.10 Environmental specifications ... 68
84.10.1 General safety ... 68
84.11 Protocol implementation conformance statement (PICS) proforma for Clause 84, Physical Medium Dependent sublayer and baseband medium, type 40GBASE-KR4 ... 69
84.11.4 PICS proforma tables for Clause 84, Physical Medium Dependent (PMD) sublayer and baseband medium, type 40GBASE-KR4 ... 69
84.11.4.5 Environmental specifications ... 69

86. Physical Medium Dependent (PMD) sublayer and medium, type 40GBASE-SR4 and 100GBASE-SR10 ... 70

86.9 Safety, installation, environment, and labeling ... 70

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

86.9.1 General safety 70
86.11 Protocol implementation conformance statement (PICS) proforma for Clause 86, Physical Medium Dependent (PMD) sublayer and medium, type 40GBASE-SR4 and 100GBASE-SR10 71
86.11.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, types 40GBASE-SR4 and 100GBASE-SR10 71
86.11.4.5 Environmental and safety specifications 71

87. Physical Medium Dependent (PMD) sublayer and medium, type 40GBASE-LR4 and 40GBASE-ER4 72

87.9 Safety, installation, environment, and labeling 72
87.9.1 General safety 72
87.13 Protocol implementation conformance statement (PICS) proforma for Clause 87, Physical Medium Dependent (PMD) sublayer and medium, type 40GBASE-LR4 and 40GBASE-ER4 73
87.13.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 40GBASE-LR4 and 40GBASE-ER4 73
87.13.4.6 Environmental specifications 73

88. Physical Medium Dependent (PMD) sublayer and medium, type 100GBASE-LR4 and 100GBASE-ER4 74

88.9 Safety, installation, environment, and labeling 74
88.9.1 General safety 74
88.12 Protocol implementation conformance statement (PICS) proforma for Clause 88, Physical Medium Dependent (PMD) sublayer and medium, type 100GBASE-LR4 and 100GBASE-ER4 75
88.12.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, types 100GBASE-LR4 and 100GBASE-ER4 75
88.12.4.6 Environmental specifications 75

89. Physical Medium Dependent (PMD) sublayer and medium, type 40GBASE-FR 76

89.8 Safety, installation, environment, and labeling 76
89.8.1 General safety 76
89.11 Protocol implementation conformance statement (PICS) proforma for Clause 89, Physical Medium Dependent (PMD) sublayer and medium, type 40GBASE-FR 77
89.11.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 40GBASE-FR 77
89.11.4.5 Environmental specifications 77

93. Physical Medium Dependent (PMD) sublayer and baseband medium, type 100GBASE-KR4 78

93.10 Environmental specifications 78
93.10.1 General safety 78
93.11 Protocol implementation conformance statement (PICS) proforma for Clause 93, Physical Medium Dependent (PMD) sublayer and baseband medium, type 100GBASE-KR4 79
93.11.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and baseband medium, type 100GBASE-KR4 79
93.11.4.5 Environmental specifications 79

94. Physical Medium Attachment (PMA) sublayer, Physical Medium Dependent (PMD) sublayer, and baseband medium, type 100GBASE-KP4 80

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

94.5 Environmental specifications ... 80
94.5.1 General safety ... 80
94.6 Protocol implementation conformance statement (PICS) proforma for Clause 94, Physical Medium Attachment (PMA) sublayer, Physical Medium Dependent (PMD) sublayer, and baseband medium, type 100GBASE-KP4 ... 81
94.6.4 PICS proforma tables for Physical Medium Attachment (PMA) sublayer, Physical Medium Dependent (PMD) sublayer, and baseband medium, type 100GBASE-KP4 ... 81
94.6.4.6 Environment specifications ... 81

95. Physical Medium Dependent (PMD) sublayer and medium, type 100GBASE-SR4 ... 82

95.9 Safety, installation, environment, and labeling ... 82
95.9.1 General safety ... 82
95.12 Protocol implementation conformance statement (PICS) proforma for Clause 95, Physical Medium Dependent (PMD) sublayer and medium, type 100GBASE-SR4 ... 83
95.12.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 100GBASE-SR4 ... 83
95.12.4.5 Environmental specifications ... 83

96. Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 100BASE-T1 ... 84

96.9 Environmental specifications ... 84
96.9.1 General safety ... 84
96.11 Protocol implementation conformance statement (PICS) proforma for Clause 96, Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 100BASE-T1 ... 85
96.11.4 PICS proforma tables for Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 100BASE-T1 ... 85
96.11.4.9 Environmental specifications ... 85

97. Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer, and baseband medium, type 1000BASE-T1 ... 86

97.9 Environmental specifications ... 86
97.9.1 General safety ... 86
97.11 Protocol implementation conformance statement (PICS) proforma for Clause 97, Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer, and baseband medium, type 1000BASE-T1 ... 87
97.11.13 Environmental specifications ... 87

100. Physical Medium Dependent (PMD) sublayer, and medium for coaxial distribution networks, type 10GPASS-XR ... 88

100.5 Environmental, safety, and labeling ... 88
100.5.1 General safety ... 88
100.7 Protocol implementation conformance statement (PICS) proforma for Clause 100, Physical Medium Dependent (PMD) sublayer and medium for coaxial cable distribution networks, type 10GPASS-XR ... 89
100.7.3 PICS proforma tables for Physical Medium Dependent (PMD) sublayer for coax cable distribution networks, type 10GPASS-XR ... 89
100.7.3.3 Environmental specifications ... 89

104. Power over Data Lines (PoDL) of Single-Pair Ethernet ... 90

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

104.8 Environmental 90
104.8.1 General safety 90
104.9 Protocol implementation conformance statement (PICS) proforma for Clause 104, Power over Data Lines (PoDL) of Single-Pair Ethernet 91
104.9.4 PICS proforma tables for Clause 104, Power over Data Lines (PoDL) of Single-Pair Ethernet 91
104.9.4.8 Environmental 91

112. Physical Medium Dependent (PMD) sublayer and medium, type 25GBASE-SR 92

112.8 Safety, installation, environment, and labeling 92
112.8.1 General safety 92
112.11 Protocol implementation conformance statement (PICS) proforma for Clause 112, Physical Medium Dependent (PMD) sublayer and medium, type 25GBASE-SR 93
112.11.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 25GBASE-SR 93
112.11.4.5 Environmental specifications 93

113. Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer, and baseband medium, types 25GBASE-T and 40GBASE-T 94

113.5 PMA electrical specifications 94
113.5.1 ~~Isolation requirement~~Electrical isolation 94
113.9 Environmental specifications 94
113.9.1 General safety 94
113.12 Protocol implementation conformance statement (PICS) proforma for Clause 113, Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer, and baseband medium, types 25GBASE-T and 40GBASE-T 95
113.12.6 PMA Electrical Specifications 95
113.12.10General safety and environmental requirements 95

122. Physical Medium Dependent (PMD) sublayer and medium, type 200GBASE-FR4, 200GBASE-LR4, 200GBASE-ER4, 400GBASE-FR8, 400GBASE-LR8, and 400GBASE-ER8 96

122.9 Safety, installation, environment, and labeling 96
122.9.1 General safety 96
122.12 Protocol implementation conformance statement (PICS) proforma for Clause 122, Physical Medium Dependent (PMD) sublayer and medium, type 200GBASE-FR4, 200GBASE-LR4, 200GBASE-ER4, 400GBASE-FR8, 400GBASE-LR8, and 400GBASE-ER8 97
122.12.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 200GBASE-FR4, 200GBASE-LR4, 200GBASE-ER4, 400GBASE-FR8, 400GBASE-LR8, and 400GBASE-ER8 97
122.12.4.8 Environmental specifications 97

126. Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer, and baseband medium, types 2.5GBASE-T and 5GBASE-T 98

126.5 PMA electrical specifications 98
126.5.1 ~~Isolation requirement~~Electrical isolation 98
126.9 Environmental specifications 98
126.9.1 General safety 98
126.12 Protocol implementation conformance statement (PICS) proforma for Clause 126—Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer, and baseband medium, types 2.5GBASE-T and 5GBASE-T 99

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

126.12.5 PMA Electrical Specifications 99
126.12.9 General safety and environmental requirements 99

128. Physical Medium Dependent sublayer and baseband medium, type 2.5GBASE-KX 100

128.9 Environmental specifications 100
128.9.1 General safety 100
128.10 Protocol implementation conformance statement (PICS) proforma for Clause 128, Physical Medium Dependent sublayer and baseband medium, type 2.5GBASE-KX 101
128.10.4 PICS proforma tables for Clause 128, Physical Medium Dependent (PMD) sublayer and baseband medium, type 2.5GBASE-KX 101
128.10.4.5 Environmental and safety specifications 101

130. Physical Medium Dependent sublayer and baseband medium, type 5GBASE-KR 102

130.9 Environmental specifications 102
130.9.1 General safety 102
130.10 Protocol implementation conformance statement (PICS) proforma for Clause 130, Physical Medium Dependent (PMD) sublayer and baseband medium, type 5GBASE-KR 103
130.10.4 PICS proforma tables for Clause 130, Physical Medium Dependent (PMD) sublayer and baseband medium, type 5GBASE-KR 103
130.10.4.6 Environmental specifications 103

138. Physical Medium Dependent (PMD) sublayer and medium, type 50GBASE-SR, 100GBASE-SR2, 200GBASE-SR4, 400GBASE-SR8 104

138.9 Safety, installation, environment, and labeling 104
138.9.1 General safety 104
138.11 Protocol implementation conformance statement (PICS) proforma for Clause 138, Physical Medium Dependent (PMD) sublayer and medium, type 50GBASE-SR, 100GBASE-SR2, 200GBASE-SR4, 400GBASE-SR8 105
138.11.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 50GBASE-SR, 100GBASE-SR2, 200GBASE-SR4, 400GBASE-SR8 105
138.11.4.5 Environmental specifications 105

139. Physical Medium Dependent (PMD) sublayer and medium, type 50GBASE-FR, 50GBASE-LR, and 50GBASE-ER 106

139.8 Safety, installation, environment, and labeling 106
139.8.1 General safety 106
139.11 Protocol implementation conformance statement (PICS) proforma for Clause 139, Physical Medium Dependent (PMD) sublayer and medium, type 50GBASE-FR, 50GBASE-LR, and 50GBASE-ER 107
139.11.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 50GBASE-FR, 50GBASE-LR, and 50GBASE-ER 107
139.11.4.6 Environmental specifications 107

140. Physical Medium Dependent (PMD) sublayer and medium, type 100GBASE-DR 108

140.8 Safety, installation, environment, and labeling 108
140.8.1 General safety 108
140.11 Protocol implementation conformance statement (PICS) proforma for Clause 140, Physical Medium Dependent (PMD) sublayer and medium, type 100GBASE-DR 109

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

140.11.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 100GBASE-DR 109
140.11.4.5 Environmental specifications 109

141. Physical Medium Dependent (PMD) sublayer and medium for Nx25G-EPON passive optical networks 110

141.8 Environmental, safety, and labeling 110
141.8.1 General safety 110
141.10 Protocol implementation conformance statement (PICS) proforma for Clause 141, Physical Medium Dependent (PMD) sublayer and medium for Nx25G-EPON passive optical networks 111
141.10.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium for passive optical networks, type 25/10GBASE-PQ, 25GBASE-PQ, 50/10GBASE-PQ, 50/25GBASE-PQ, and 50GBASE-PQ 111
141.10.4.44 Environmental specifications 111

145. Power over Ethernet 112

145.4 Additional electrical specifications 112
145.4.1 Electrical i~~t~~solation 112
145.6 Environmental 113
145.6.1 General safety 113
145.7 Protocol implementation conformance statement (PICS) proforma for Clause 145, Power over Ethernet 114
145.7.3 PICS proforma tables for Power over Ethernet 114
145.7.3.3 Electrical specifications applicable to the PSE and PD 114
145.7.3.7 Environmental specifications applicable to PSEs and PDs 114
145.7.3.8 Environmental specifications applicable to the PSE 114

146. Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 10BASE-T1L 115

146.9 Environmental specifications 115
146.9.1 General safety 115
146.11 Protocol implementation conformance statement (PICS) proforma for Clause 146, Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 10BASE-T1L 116
146.11.4 PICS proforma tables for Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 10BASE-T1L 116
146.11.4.6 Environmental specifications 116

147. Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 10BASE-T1S 117

147.10 Environmental specifications 117
147.10.1 General safety 117

150. Physical Medium Dependent (PMD) sublayer and medium, type 400GBASE-SR4.2 118

150.9 Safety, installation, environment, and labeling 118
150.9.1 General safety 118
150.11 Protocol implementation conformance statement (PICS) proforma for Clause 150, Physical Medium Dependent (PMD) sublayer and medium, type 400GBASE-SR4.2 119

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

150.11.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 400GBASE-SR4.2 119
150.11.4.5 Environmental specifications 119

Annex J (normative) Electrical isolation and general safety 120

J.1 Electrical isolation 120
J.2 General safety 120
J.3 Protocol implementation conformance statement (PICS) proforma for Annex J, Electrical isolation and general safety 121
J.3.1 Introduction 121
J.3.2 Identification 121
J.3.2.1 Implementation identification 121
J.3.2.2 Protocol summary 121
J.3.3 Major capabilities/options 122
J.3.4 PICS proforma tables for electrical isolation and general safety 122
J.3.4.1 Electrical isolation 122
J.3.4.2 General safety 122

Annex 83A (normative) 40 Gb/s Attachment Unit Interface (XLAUI) and 100 Gb/s ten-lane Attachment Unit Interface (CAUI-10) 123

83A.6 Environmental specifications 123
83A.6.1 General safety 123
83A.7 Protocol implementation conformance statement (PICS) proforma for Annex 83A, 40 Gb/s Attachment Unit Interface (XLAUI) and 100 Gb/s ten-lane Attachment Unit Interface (CAUI-10) 124
83A.7.7 Environmental specifications 124

Annex 83B (normative) Chip-to-module 40 Gb/s Attachment Unit Interface (XLAUI) and 100 Gb/s ten-lane Attachment Unit Interface (CAUI-10) 125

83B.3 Environmental specifications 125
83B.3.1 General safety 125
83B.4 Protocol implementation conformance statement (PICS) proforma for Annex 83B, Chip-to-module 40 Gb/s Attachment Unit Interface (XLAUI) and 100 Gb/s ten-lane Attachment Unit Interface (CAUI-10) 126
83B.4.6 Environmental specifications 126

Annex 86A (normative) Parallel Physical Interface (nPPI) for 40GBASE-SR4 and 40GBASE-LR4 (XLPPI) and 100GBASE-SR10 (CPPI) 127

86A.7 Safety, installation, environment, and labeling 127
86A.7.1 General safety 127
86A.8 Protocol implementation conformance statement (PICS) proforma for Annex 86A, Parallel Physical Interface (nPPI) for 40GBASE-SR4 and 40GBASE-LR4 (XLPPI) and 100GBASE-SR10 (CPPI) 128
86A.8.4 PICS proforma tables for Parallel Physical Interface (nPPI) for 40GBASE-SR4 and 40GBASE-LR4 (XLPPI) and 100GBASE-SR10 (CPPI) 128
86A.8.4.4 Environmental and safety specifications 128

Copyright © 2021 IEEE. All rights reserved.
Documents
Document Sharing Hub
Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

IEEE Standard for Ethernet

Amendment 10:
Maintenance #14: Isolation

(This amendment is based on IEEE Std 802.3™-2018 as amended by IEEE Std 802.3cb™-2018, IEEE Std 802.3bt™-2018, IEEE Std 802.3cd™-2018, IEEE Std 802.3cn™-2019, IEEE Std 802.3cg™-2019, IEEE Std 802.3cq™-2020, IEEE Std 802.3cm™-2020, IEEE Std 802.3ch™-2020, and IEEE Std 802.3ca™-2020.)

NOTE—The editing instructions contained in this amendment define how to merge the material contained therein into the existing base standard and its amendments to form the comprehensive standard.

The editing instructions are shown in ***bold italic***. Four editing instructions are used: change, delete, insert, and replace. ***Change*** is used to make corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed by using ~~strikethrough~~ (to remove old material) and underscore (to add new material). ***Delete*** removes existing material. ***Insert*** adds new material without disturbing the existing material. Deletions and insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. ***Replace*** is used to make changes in figures or equations by removing the existing figure or equation and replacing it with a new one. Editing instructions, change markings, and this NOTE will not be carried over into future editions because the changes will be incorporated into the base standard.

Cross references that refer to clauses, tables, equations, or figures not covered by this amendment are highlighted in green.[1]

[1] Notes in text, tables, and figures are given for information only and do not contain requirements needed to implement the standard.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

1. Introduction

1.3 Normative references

Change the reference for IEC 62368-1 (as inserted by IEEE Std 802.3cg-2019) as follows:

IEC 62368-1:2018~~4~~, Audio/video, information and communication technology equipment—Part 1: Safety requirements.[2]

Insert the following new reference in alphanumeric order:

ITU-T Recommendation K.44, 2019—Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents—Basic Recommendation.[3]

[2]IEC publications are available from the International Electrotechnical Commission (https://www.iec.ch/) and the American National Standards Institute (https://www.ansi.org).

[3]ITU-T publications are available from the International Telecommunications Union (https://www.itu.int/).

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

8. Medium Attachment Unit and baseband medium specifications, type 10BASE5

8.3 MAU–medium electrical characteristics

8.3.2 MAU electrical characteristics

8.3.2.1 Electrical isolation

Change 8.3.2.1 as follows:

The MAU provides isolation between the AUI cable and the coaxial trunk cable. This isolation shall meet the isolation requirements as specified in J.1.

~~The MAU must provide isolation between the AUI cable and the coaxial trunk cable. This isolation shall withstand at least one of the following electrical strength tests:~~

~~a) 1500 V rms at 50 Hz to 60 Hz for 60 s, applied as specified in 5.3.2 of IEC 60950: 1991.~~
~~b) 2250 Vdc for 60 s, applied as specified in 5.3.2 of IEC 60950: 1991.~~
~~c) A sequence of ten 2400 V impulses of alternating polarity, applied at intervals of not less than 1 s. The shape of the impulses shall be 1.2/50 μs (1.2 μs virtual front time, 50 μs virtual time of half value), as defined in IEC 60060.~~

~~There shall be no isolation breakdown, as defined in 5.3.2 of IEC 60950: 1991, during the test. The resistance after the test shall be at least 2 MΩ, measured at 500 Vdc. In addition, the isolation impedance between the DTE and the coaxial cable shield shall be less than 15 Ω between 3 MHz and 30 MHz.~~

CAUTION

The current electrical isolation requirement is a change that was incorporated into IEEE Std 802.3-1996. Older editions of IEEE Std 802.3 had a significantly lower isolation requirement.

8.7 Environmental specifications

8.7.1 General safety requirements

Change 8.7.1 as follows:

~~All stations~~All Physical Layer MDIs meeting this standard shall conform to ~~IEC 60950: 1991~~the general safety requirements as specified in J.2.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

8.8 Protocol implementation conformance statement (PICS) proforma for Clause 8, Medium Attachment Unit and baseband medium specifications, type 10BASE5[4]

8.8.6 PICS proforma tables for MAU

8.8.6.8 MAU electrical characteristics

Change the table in 8.8.6.8 as follows:

Item	Parameter	Reference	Status	Support	Value/Comment
1	Isolation ~~impedance~~ between MDI and AUI cable (each conductor, including shields)	8.3.2.1	M	Yes [ ] No [ ]	~~> 250 kΩ at 60 Hz, < 15 Ω for 3 MHz to 30 MHz~~ Conforms to J.1
~~2~~	~~Breakdown voltage~~	~~8.3.2.1~~	~~M~~	~~Yes [ ] No [ ]~~	~~≥ 1.5 kV ac, rms~~
~~3~~ 2	Current drawn from AUI sources	8.3.2.2	M	Yes [ ] No [ ]	≤ 0.5 A
~~4~~ 3	Operation over VP voltage range	8.3.2.2	M	Yes [ ] No [ ]	11.28–15.75 V, any permissible AUI cable
~~5~~ 4	Low VP circuit behavior	8.3.2.2	M	Yes [ ] No [ ]	No disruption of media
~~6~~ 5	MAU current labeling	8.3.2.2	M	Yes [ ] No [ ]	Current consumption shall be labeled externally
~~7~~ 6	Reliability	8.3.2.3	M	Yes [ ] No [ ]	MTBF ≥ 1 million hours of continuous operation

[4]*Copyright release for PICS proformas:* Users of this standard may freely reproduce the PICS proforma in this subclause so that it can be used for its intended purpose and may further publish the completed PICS.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

8.8.6.11 Safety requirements

Change the row for item 2 in the table in 8.8.6.11 as follows (unchanged rows not shown):

Item	Parameter	Reference	Status	Support	Value/Comment
…					
2	General safety	8.7.1	M	Yes [ ] No [ ]	~~Conforms to IEC 60950: 1991~~ Conforms to J.2
…					

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

9. Repeater unit for 10 Mb/s baseband networks

9.9 Medium attachment unit and baseband medium specification for a vendor-independent FOIRL

9.9.3 FOMAU electrical characteristics

9.9.3.1 Electrical isolation

Insert a new note at the beginning of 9.9.3.1 as follows:

NOTE—Since February 2021, electrical isolation requirements are in J.1.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

10. Medium attachment unit and baseband medium specifications, type 10BASE2

10.8 Environmental specifications

10.8.3 Regulatory requirements

Change 10.8.3 as follows:

NOTE—Since September 2011, maintenance changes are no longer being considered for this clause. Since February 2021, electrical isolation requirements are in J.1.

The MAU and medium should consider IEC 60950 in addition to local and national regulations. See IEC 60950 and MIL-C-17F-1983 [B51].

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

12. Physical signaling, medium attachment, and baseband medium specifications, type 1BASE5

12.10 Safety

12.10.1 Isolation

Insert a new note at the beginning of 12.10.1 as follows:

NOTE—Since September 2003, maintenance changes are no longer being considered for this clause. Since February 2021, electrical isolation requirements are in J.1.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

14. Twisted-pair medium attachment unit (MAU) and baseband medium, type 10BASE-T including type 10BASE-Te

14.3 MAU electrical specifications

14.3.1 MAU-to-MDI interface characteristics

Change the title and text of 14.3.1.1 (as modified by IEEE Std 802.3bt-2018) as follows:

14.3.1.1 ~~Isolation requirement~~Electrical isolation

A MAU with a MDI that is a PI (see 33.1.3) shall meet the isolation requirements defined in 33.4.1 or 145.4.1.

A MAU with a MDI that is not a PI shall provide isolation between the DTE Physical Layer circuits including frame ground and all MDI leads including those not used by 10BASE-T.

This electrical isolation shall meet the isolation requirements as specified in J.1.~~withstand at least one of the following electrical strength tests.~~

~~a) 1500 V rms at 50 Hz to 60 Hz for 60 s, applied as specified in subclause 5.2.2 of IEC 60950-1:2001.~~
~~b) 2250 V dc for 60 s, applied as specified in subclause 5.2.2 of IEC 60950-1:2001.~~
~~c) A sequence of ten 2400 V impulses of alternating polarity, applied at intervals of not less than 1 s. The shape of the impulses shall be 1.2/50 µs (1.2 µs virtual front time, 50 µs virtual time of half value), as defined in IEC 60950-1:2001 Annex N.~~

~~There shall be no insulation breakdown, as defined in subclause 5.2.2 of IEC 60950-1:2001, during the test. The resistance after the test shall be at least 2 MΩ, measured at 500 V dc.~~

14.7 Environmental specifications

14.7.1 General safety

Change 14.7.1 as follows:

An MAU meeting this standard shall conform to the general safety requirements as specified in J.2.~~All equipment meeting this standard shall conform to IEC 60950-1.~~

14.10 Protocol implementation conformance statement (PICS) proforma for Clause 14, Twisted-pair medium attachment unit (MAU) and baseband medium, type 10BASE-T and type 10BASE-Te[5]

14.10.4 PICS proforma for 10BASE-T

14.10.4.5 PICS proforma tables for MAU

Change the title of 14.10.4.5.11 as follows:

14.10.4.5.11 ~~Isolation requirements~~Electrical isolation

[5]*Copyright release for PICS proformas:* Users of this standard may freely reproduce the PICS proforma in this subclause so that it can be used for its intended purpose and may further publish the completed PICS.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

Change the table in 14.10.4.5.11 as follows:

	Parameter	Subclause	Req	Imp	Value/Comment
IR1 ~~IR1a~~	~~Isolation, MDI leads to DTE Physical Layer circuits~~ Electrical isolation	14.3.1.1	C		~~Any one of three tests listed in 14.3.1.1 Function provided by MAUs that do not encompass the PI of a PD within their MDI.~~ Conforms to J.1
~~IR1b~~	~~Isolation, MDI leads to all external conductors~~	~~14.3.1.1~~	~~C~~		~~Any of the three tests listed in 14.3.1.1. Function provided by MAUs that encompass the PI of a PD within their MDI.~~
~~IR2~~	~~Resistance after breakdown test~~	~~14.3.1.1~~	~~M~~		~~≥ 2 MΩ at 500 Vdc~~

14.10.4.5.15 Safety requirements

Change item SR3 in the table in 14.10.4.5.15 as follows (unchanged rows not shown):

	Parameter	Subclause	Req	Imp	Value/Comment
…					
SR3	General safety	14.7.1	M		~~Conforms to IEC 60950:1991~~ Conforms to J.2
…					

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

15. Fiber optic medium and common elements of medium attachment units and star, type 10BASE-F

15.3 Characteristics of the fiber optic medium

15.3.4 Electrical isolation

Change 15.3.4 as follows:

Electrical isolation shall be provided between MDIs attached to the fiber optic cable. There shall be no conducting path between the optical medium connector plug and any conducting element within the fiber optic cable. This isolation shall meet the isolation requirements as specified in J.1.~~withstand at least one of the following electrical strength tests:~~

~~a) 1500 V rms at 50 Hz to 60 Hz for 60 s, applied as specified in 5.3.2 of IEC 60950:1991.~~
~~b) 2250 Vdc for 60 s, applied as specified in 5.3.2 of IEC 60950:1991.~~
~~c) A sequence of ten 2400 V impulses of alternating polarity, applied at intervals of not less than 1 s. The shape of the impulses shall be 1.2/50 µs (1.2 µs virtual front time, 50 µs virtual time of half value) as defined in IEC 60060.~~

~~There shall be no isolation breakdown, as defined in 5.3.2 of IEC 60950:1991, during the test. The resistance after the test shall be at least 2 MΩ measured at 500 Vdc.~~

Copyright © 2021 IEEE. All rights reserved.

AVA Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

15.8 Protocol implementation conformance statement (PICS) proforma for Clause 15, Fiber optic medium and common elements of medium attachment units and star, type 10BASE-F[6]

15.8.6 PICS Proforma for the fiber optic medium

15.8.6.4 Electrical isolation requirements

Change the table in 15.8.6.4 as follows:

Item	Feature	Subclause	Value/Comment	Status	Support
IR1	Electrical isolation, optical connector plug to any electrically conducting element in cable	15.3.4	~~Any one of three tests listed in 15.3.4~~ Conforms to J.1	M	Yes [ ]
~~IR2~~	~~Resistance after breakdown test~~	~~15.3.4~~	~~> 2 MΩ measured at 500 Vdc~~	~~M~~	~~Yes [ ]~~

[6]*Copyright release for PICS proformas:* Users of this standard may freely reproduce the PICS proforma in this subclause so that it can be used for its intended purpose and may further publish the completed PICS.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

23. Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) sublayer and baseband medium, type 100BASE-T4

23.5 PMA electrical specifications

23.5.1 PMA-to-MDI interface characteristics

23.5.1.1 Isolation requirement

Insert a new note at the beginning of 23.5.1.1 as follows:

NOTE—Since September 2003, maintenance changes are no longer being considered for this clause. Since February 2021, electrical isolation requirements are in J.1.

23.9 Environmental specifications

23.9.1 General safety

Change 23.9.1 as follows:

NOTE—Since September 2003, maintenance changes are no longer being considered for this clause. Since February 2021, safety information is in J.2.

All equipment meeting this standard shall conform to IEC 60950: 1991.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

25. Physical Medium Dependent (PMD) sublayer and baseband medium, type 100BASE-TX

25.4 Specific requirements and exceptions

25.4.6 Replacement of 8.4.1, “UTP isolation requirements”

Change 25.4.6 (as modified by IEEE Std 802.3bt-2018) as follows:

A PMD with a MDI that is a PI (see 33.1.3 and 145.1.3) shall meet the isolation requirements defined in 33.4.1 and 145.4.1.

A PMD with a MDI that is not a PI shall provide isolation between frame ground and all MDI leads including those not used by the 100BASE-TX PMD.

This electrical isolation shall meet the isolation requirements as specified in J.1.~~withstand at least one of the following electrical strength tests.~~

~~a) 1500 V rms at 50 Hz to 60 Hz for 60 s, applied as specified in subclause 5.2.2 of IEC 60950-1:2001.~~
~~b) 2250 V dc for 60 s, applied as specified in subclause 5.2.2 of IEC 60950-1:2001.~~
~~c) A sequence of ten 2400 V impulses of alternating polarity, applied at intervals of not less than 1 s. The shape of the impulses shall be 1.2/50 µs (1.2 µs virtual front time, 50 µs virtual time of half value), as defined in IEC 60950-1:2001 Annex N.~~

~~There shall be no insulation breakdown, as defined in subclause 5.2.2 of IEC 60950-1:2001, during the test. The resistance after the test shall be at least 2 MΩ, measured at 500 V dc.~~

NOTE—In the case of a PMD with a MDI that is not a PI, these requirements are equivalent to those found in TP-PMD.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

25.6 Protocol implementation conformance statement (PICS) proforma for Clause 25, Physical Medium Dependent (PMD) sublayer and baseband medium, type 100BASE-TX[7]

25.6.4 PICS proforma tables for the Physical Medium Dependent (PMD) sublayer and baseband medium, type 100BASE-TX

25.6.4.2 PMD compliance

Change item PD7 in the table in 25.6.4.2 as follows (unchanged rows not shown):

Item	Feature	Subclause	Status	Support	Value/Comment
…					
PD7	Isolation requirements	25.4.6	M		Conforms to J.1

[7]*Copyright release for PICS proformas:* Users of this standard may freely reproduce the PICS proforma in this subclause so that it can be used for its intended purpose and may further publish the completed PICS.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022

27. Repeater for 100 Mb/s baseband networks

27.5 Environmental specifications

27.5.1 General safety

Insert a new note at the beginning of 27.5.1 as follows:

NOTE—Since September 2011, maintenance changes are no longer being considered for this clause. Since February 2021, safety information is in J.2.

Copyright © 2021 IEEE. All rights reserved.

Documents
Document Sharing Hub

Full document details: ISO_IEC_IEEE 8802-3_2021_Amd 10_2022