

**Health informatics - Point-of-care medical
device communication - Part 30300:
Transport profile - Infrared wireless**

Health informatics - Point-of-care medical device
communication - Part 30300: Transport profile -
Infrared wireless

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 11073-30300:2005 sisaldab Euroopa standardi EN ISO 11073-30300:2005 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 29.09.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 11073-30300:2005 consists of the English text of the European standard EN ISO 11073-30300:2005.</p> <p>This document is endorsed on 29.09.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

<p>Käsitlusala:</p> <p>The scope of this standard is to define an IrDA-based transport profile for medical device communication that uses short-range infrared, as a companion standard to ISO/IEEE 11073-30200, which specifies a cableconnected physical layer. This standard also supports use cases consistent with industry practice for handheld personal digital assistants (PDAs) and network APs that support IrDA-infrared communication.</p>	<p>Scope:</p> <p>The scope of this standard is to define an IrDA-based transport profile for medical device communication that uses short-range infrared, as a companion standard to ISO/IEEE 11073-30200, which specifies a cableconnected physical layer. This standard also supports use cases consistent with industry practice for handheld personal digital assistants (PDAs) and network APs that support IrDA-infrared communication.</p>
--	--

ICS 35.240.80

Võtmesõnad:

ICS 35.240.80

English Version

Health informatics - Point-of-care medical device communication
- Part 30300: Transport profile - Infrared wireless (ISO/IEEE
11073-30300:2004)

Informatique de santé - Communication entre dispositifs
médicaux sur le site des soins - Partie 30300: Profil de
transport - Faisceau infrarouge (ISO/IEEE 11073-
30300:2004)

Medizinische Informatik - Kommunikation patientennaher
medizinischer Geräte - Teil 30300: Transportprofil -
drahtlose Infrarotübertragung

This European Standard was approved by CEN on 16 August 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Foreword

The text of ISO/IEEE 11073-30300:2004 has been prepared by Technical Committee ISO/TC 215 "Health informatics" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 11073-30300:2005 by Technical Committee CEN/TC 251 "Health informatics", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2006, and conflicting national standards shall be withdrawn at the latest by February 2006.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO/IEEE 11073-30300:2004 has been approved by CEN as EN ISO 11073-30300:2005 without any modifications.

INTERNATIONAL
STANDARD

ISO/IEEE
11073-30300

First edition
2004-12-15

**Health informatics — Point-of-care
medical device communication —
Part 30300:
Transport profile — Infrared wireless**

*Informatique de santé — Communication entre dispositifs médicaux sur le
site des soins —
Partie 30300: Profil de transport — Faisceau infrarouge*

**Health informatics — Point-of-care
medical device communication —
Part 30300:
Transport profile — Infrared wireless**

Sponsor

IEEE 1073™ Standard Committee

of the

IEEE Engineering in Medicine and Biology Society

Approved 24 June 2004

IEEE-SA Standards Board



IEEE

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. Neither the ISO Central Secretariat nor the IEEE accepts any liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies and IEEE members. In the unlikely event that a problem relating to it is found, please inform the ISO Central Secretariat or the IEEE at the address given below.

Abstract: This standard establishes a connection-oriented transport profile and physical layer suitable for medical device communications that use short-range infrared wireless. This standard defines communications services and protocols that are consistent with specifications of the Infrared Data Association (IrDA) and are optimized for point-of-care (POC) applications at or near the patient.

Keywords: access point, bedside, device interfaces, infrared, Infrared Data Association, IrDA, legacy device, medical device, medical device communications, medical information bus, MIB, patient, Simple Network Time Protocol, SNTP, point-of-care, POC, point-of-care testing, POCT, wireless

This ISO/IEEE document is an International Standard and is copyright-protected by ISO and the IEEE. Except as permitted under the applicable laws of the user's country, neither this ISO/IEEE standard nor any extract from it may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission being secured.

Requests for permission to reproduce should be addressed to either ISO or the IEEE at the addresses below.

ISO copyright office
Case postale 56 · CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Institute of Electrical and Electronics Engineers
Standards Association
Manager, Standards Intellectual Property
445 Hoes Lane
Piscataway, NJ 08854
E-mail: stds.ipr@ieee.org
Web: www.ieee.org

Copyright © 2004 ISO/IEEE. All rights reserved.
Published 15 December 2004. Printed in the United States of America.

IEEE is a registered trademark in the U.S. Patent & Trademark Office, owned by the Institute of Electrical and Electronics Engineers, Incorporated.

Print: ISBN 0-7381-4093-7 SH95258
PDF: ISBN 0-7381-4094-5 SS95258

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.

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.

Use of an IEEE Standard is wholly voluntary. The IEEE disclaims liability for any personal injury, property or other damage, of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, or reliance upon this, or any other IEEE Standard document.

The IEEE does not warrant or represent the accuracy or content of the material contained herein, and expressly disclaims any express or implied warranty, including any implied warranty of merchantability or fitness for a specific purpose, or that the use of the material contained herein is free from patent infringement. IEEE Standards documents are supplied **“AS IS.”**

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 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.

In publishing and making this document available, the IEEE is not suggesting or rendering professional or other services for, or on behalf of, any person or entity. Nor is the IEEE undertaking to perform any duty owed by any other person or entity to another. Any person utilizing this, and any other IEEE Standards document, should rely upon the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

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 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 societies and Standards Coordinating Committees are not able to provide an instant response to interpretation requests except in those cases where the matter has previously received formal consideration. At lectures, symposia, seminars, or educational courses, an individual presenting information on IEEE standards shall make it clear that his or her views should be considered the personal views of that individual rather than the formal position, explanation, or interpretation of the IEEE.

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

Secretary, IEEE-SA Standards Board
445 Hoes Lane
Piscataway, NJ 08854 USA

NOTE — 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 with respect to the existence or validity of any patent rights in connection therewith. The IEEE shall not be responsible for identifying patents for which a license may be required by an IEEE standard or for conducting inquiries into the legal validity or scope of those patents that are brought to its attention.

Authorization to photocopy portions of any individual standard for internal or personal use is granted by the Institute of Electrical and Electronics Engineers, Inc., provided that the appropriate fee is paid to Copyright Clearance Center. To arrange for payment of licensing fee, please contact Copyright Clearance Center, Customer Service, 222 Rosewood Drive, Danvers, MA 01923 USA; +1 978 750 8400. Permission to photocopy portions of any individual standard for educational classroom use can also be obtained through the Copyright Clearance Center.

ISO Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75% of the member bodies casting a vote.

A pilot project between ISO and the IEEE has been formed to develop and maintain a group of ISO/IEEE standards in the field of medical devices as approved by Council resolution 43/2000. Under this pilot project, IEEE is responsible for the development and maintenance of these standards with participation and input from ISO member bodies.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. Neither ISO nor the IEEE shall be held responsible for identifying any or all such patent rights.

ISO/IEEE 11073-30300:2004(E) was prepared by IEEE 1073 Committee of the IEEE Engineering in Medicine and Biology Society.

IEEE Introduction

This introduction is not part of ISO/IEEE 11073-30300:2004(E), Health informatics — Point-of-care medical device communication — Part 30300: Transport profile — Infrared wireless.

ISO/IEEE 11073 standards enable communication between medical devices and external computer systems. They provide automatic and detailed electronic data capture of patient vital signs information and device operational data. The primary goals are to:

- Provide real-time plug-and-play interoperability for patient-connected medical devices
- Facilitate the efficient exchange of vital signs and medical device data, acquired at the point-of-care, in all health care environments

“Real-time” means that data from multiple devices can be retrieved, time correlated, and displayed or processed in fractions of a second. “Plug-and-play” means that all the clinician has to do is make the connection — the systems automatically detect, configure, and communicate without any other human interaction.

“Efficient exchange of medical device data” means that information that is captured at the point-of-care (e.g., patient vital signs data) can be archived, retrieved, and processed by many different types of applications without extensive software and equipment support, and without needless loss of information. The standards are especially targeted at acute and continuing care devices, such as patient monitors, ventilators, infusion pumps, ECG devices, etc. They comprise a family of standards that can be layered together to provide connectivity optimized for the specific devices being interfaced.

Notice to users

Patents

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 with respect to the existence or validity of any patent rights in connection therewith. The IEEE shall not be responsible for identifying patents or patent applications for which a license may be required by to implement an IEEE standard or for conducting inquiries into the legal validity or scope of those patents that are brought to its attention.

Errata

Errata, if any, for this and all other standards can be accessed at the following URL: <http://standards.ieee.org/reading/ieee/updates/errata/index.html>. Users are encouraged to check this URL for errata periodically.

Interpretations

Current interpretations can be accessed at the following URL: <http://standards.ieee.org/reading/ieee/interp/index.html>.

Participants

At the time this standard was completed, the working group of the IEEE 1073 Standard Committee had the following membership:

Paul Schluter, *Chair and Editor*

Todd H. Cooper
Kai Hassing
Michael Krämer
Simon Meij

Thomas Norgall
Daniel Nowicki
Melvin Reynolds
Michael Spicer

Lars Steubesand
Andrew Sutton
Alpo Värri
Paul Woolman

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

Tamer Beser
Thomas Canup
Todd H. Cooper
Nowicki Daniel
Grace Esche
W. Michael Gardiner

Harald Greiner
Jack Harrington
Jörg Kampmann
Robert Kennelly
Yuan Ma
Simon Meij
S. Mark Poler

Melvin Reynolds
Ricardo Ruiz
Michael Spicer
Paul Schluter
Rick Schrenker
Lars Steubesand

When the IEEE-SA Standards Board approved this standard on 24 June 2004, it had the following membership:

Don Wright, *Chair*

Steve M. Mills, *Vice Chair*

Judith Gorman, *Secretary*

Chuck Adams
H. Stephen Berger
Mark D. Bowman
Joseph A. Bruder
Bob Davis
Roberto de Boisson
Julian Forster*
Arnold M. Greenspan

Mark S. Halpin
Raymond Hapeman
Richard J. Holleman
Richard H. Hulett
Lowell G. Johnson
Joseph L. Koepfinger*
Hermann Koch
Thomas J. McGean
Daleep C. Mohla

Paul Nikolich
T. W. Olsen
Ronald C. Petersen
Gary S. Robinson
Frank Stone
Malcolm V. Thaden
Doug Topping
Joe D. Watson

*Member Emeritus

Also included are the following nonvoting IEEE-SA Standards Board liaisons:

Satish K. Aggarwal, *NRC Representative*
Richard DeBlasio, *DOE Representative*
Alan Cookson, *NIST Representative*

Don Messina
IEEE Standards Project Editor

Contents

1.	Overview.....	1
1.1	Scope.....	2
1.2	Purpose.....	2
1.3	Standards compatibility	2
1.4	Audience	2
2.	References.....	3
3.	Definitions, acronyms, and abbreviations.....	4
3.1	Definitions	4
3.2	Acronyms and abbreviations	7
4.	Goals for this standard	9
5.	Architecture	10
5.1	Topology	10
5.2	Protocol layering.....	11
5.3	IrDA primary and secondary roles.....	12
5.3.1	ISO/IEEE 11073-30200.....	12
5.3.2	PDA and local area network (LAN) AP (LAP).....	13
5.3.3	Common AP	13
5.4	Client-server models for medical device communication	14
6.	Physical layer.....	14
6.1	IrDA transceiver power options.....	15
6.2	Signaling rates.....	15
7.	Data link layer.....	16
7.1	IrDA primary and secondary roles.....	17
7.1.1	ISO/IEEE 11073	17
7.1.2	NCCLS POCT1	17
7.2	IrLAP frame.....	17
7.3	Procedure model	18
7.3.1	Discovery	18
7.3.2	Negotiation and connection	18
7.3.3	Information transfer	19
7.3.4	Disconnect	19
7.4	Minimum data link layer requirements.....	19
7.4.1	Minimum data link layer services.....	19
7.4.2	Negotiation.....	20
7.4.3	Link disconnect time.....	20
7.4.4	Contention state	20
7.4.5	Signaling speed.....	21
7.4.6	SIR interaction pulse (SIP)	21
7.4.7	Data size.....	21
7.4.8	Poll interval.....	21

8.	Network layer	22
8.1	Discovery information	22
8.2	Information access requirements	24
8.2.1	IASs	24
8.2.2	Global identifier number	24
8.2.3	Interface type	25
8.2.4	Port identifier number	25
8.2.5	SAPs	25
8.2.6	Supported objects and attributes	25
8.2.7	Extending the list of objects and attributes	27
8.3	Minimum IrLMP multiplexer requirements	27
9.	Transport layer	28
9.1	MTU	28
9.2	Transport service requirements	29
9.3	MDDL service	29
10.	Time synchronization	29
11.	Labeling and conformance requirements	30
11.1	Labeling requirements	30
11.2	Conformance requirements	31
Annex A (informative)	IrDA physical layer parameters	32
Annex B (informative)	Overview of ISO/IEEE 11073-30200	36
Annex C (informative)	ISO/IEEE 11073-30200 cable-to-infrared adapter	39
Annex D (informative)	Marking guidelines	41
Annex E (normative)	IrDA conformance requirements	44
Annex F (normative)	Networked APs for NCCLS POCT1 devices	47
Annex G (informative)	Networked APs for ISO/IEEE 11073 devices	54
Annex H (informative)	Compatibility with ISO/IEEE 11073-30200 and NCCLS POCT1	58
Annex I (informative)	Bibliography	59

Health informatics — Point-of-care medical device communication —

Part 30300:

Transport profile — infrared wireless

1. Overview

This standard is divided into eleven clauses, as follows:

- Clause 1 provides an overview of this standard.
- Clause 2 lists references to other standards that are useful in applying this standard.
- Clause 3 provides definitions and abbreviations.
- Clause 4 provides goals for this standard.
- Clause 5 provides an overview of network topology and layering.
- Clause 6 provides a profile of the physical layer.
- Clause 7 provides a profile of the data link layer.
- Clause 8 provides a profile of the network layer.
- Clause 9 provides a profile of the transport layer.
- Clause 10 describes the optional time synchronization service.
- Clause 11 provides labeling and conformance requirements.

This standard also contains nine annexes, as follows:

- Annex A describes the Infrared Data Association (IrDA) infrared physical layer.
- Annex B provides an overview of the ISO/IEEE 11073-30200¹ cable-connected physical layer.
- Annex C provides an example of an ISO/IEEE 11073-30200 cable-connected infrared adapter.
- Annex D provides marking guidelines.
- Annex E defines the IrDA profile specifications adapted from the IrDA implementation guidelines.
- Annex F defines networked access points (APs) for NCCLS *Point-of-Care Connectivity; Approved Standard* (NCCLS POCT1) diagnostic devices.
- Annex G provides guidelines for networked APs for ISO/IEEE 11073 devices.

¹Information on references can be found in Clause 2.

- Annex H discusses lower layer compatibility with other medical communication standards.
- Annex I provides bibliographical references.

1.1 Scope

The scope of this standard is to define an IrDA-based transport profile for medical device communication that uses short-range infrared, as a companion standard to ISO/IEEE 11073-30200, which specifies a cable-connected physical layer. This standard also supports use cases consistent with industry practice for handheld personal digital assistants (PDAs) and network APs that support IrDA-infrared communication.

1.2 Purpose

The purpose of this standard is to provide connection-oriented communication services and protocols consistent with IrDA specifications, using short-range infrared as the physical layer. This standard extends and complements ISO/IEEE 11073-30200, which specifies a cable-connected physical layer. The use of IrDA-infrared is appropriate for mobile and portable point-of-care (POC) clinical lab instruments (e.g., glucose meters) and other medical devices that require intermittent point-and-shoot connectivity to a data repository.

This standard utilizes the work embodied in the Connectivity Industry Consortium (CIC) and NCCLS POCT1 device and AP interface specification (Appendix A), which is part of an overall effort to standardize communication for POC medical devices using a single transport protocol (IrDA Tiny Transport Protocol [TinyTP]) running over two physical layers: cable-connected and infrared.

1.3 Standards compatibility

This standard is one part of the family of ISO/IEEE 11073 standards. It is a companion standard to ISO/IEEE 11073-30200. Both standards describe connection-oriented communications services and protocols consistent with standards of the IrDA.

Like ISO/IEEE 11073-30200, this standard is designed to be compatible with the ISO/IEEE 11073 upper layer standards such as the ISO/IEEE 11073-10000 and ISO/IEEE 11073-20000 families of standards. It is also fully compatible with (and is largely based on) Appendix A of the NCCLS POCT1 and is capable of supporting other upper layer medical device communication standards, such as the NCCLS POCT1 device messaging layer for POC diagnostic devices.

Finally, this standard specifies and provides recommendations for how a network AP acts as a relay between the IrDA TinyTP connection to the medical device and a Transmission Control Protocol/Internet Protocol (TCP/IP) connection to a remote host on the network.² This is an essential first step toward deploying the ISO/IEEE 11073 family of standards on the widely used TCP/IP and other standard Internet protocols.

1.4 Audience

The primary users of this standard are technical personnel who are creating or interfacing to a medical device communications system. Familiarity with the ISO/IEEE 11073 family of standards is recommended. Familiarity with communications and networking technologies is also recommended.

²This standard provides a normative specification regarding network APs for NCCLS POCT1 devices in Annex F and informative guidance regarding network APs for ISO/IEEE 11073 devices. A future ISO/IEEE 11073 internetworking standard may include other profiles based on User Datagram Protocol/Internet Protocol (UDP/IP) as well as TCP/IP.

2. References

This standard shall be used in conjunction with the following publications. When the following standards are superseded by an approved revision, the revision shall apply.

ANSI/TIA/EIA-232-F, Interface Between Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange.³

ANSI/TIA/EIA-568-A, Commercial Building Telecommunications Cabling Standard.

CENELEC EN 60825-1/A11 (amendment to CENELEC version of IEC 60825-1, Safety of Laser Products —Part 1: Equipment Classification, Requirements and User's Guide).⁴

IEC 60417-1, Graphical Symbols for Use on Equipment—Part 1: Overview and Application.⁵

IEC 60825-1, Safety of laser products—Part I: Equipment classification, requirements and user's guide, as amended (reported at TC 76 Meeting, Frankfurt, Germany, October 31, 1997).

IEEE Std 802.3TM, IEEE Standard for Local Area Networks—Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications.^{6, 7}

IEEE Std 1073TM, IEEE Standard for Medical Device Communications—Overview and Framework.

ISO/IEEE 11073-30200, Health informatics — Point-of-care-medical device communication — Part 30200: Transport profile — Cable connected.

IETF Network Working Group Report RFC-1305, Network Time Protocol (version 3) specification, implementation and analysis, Mills, D., University of Delaware, Mar. 1992.^{8, 9}

IETF Network Working Group Report RFC-2030, Simple Network Time Protocol (SNTP) (version 4) for IPv4, IPv6 and OSI, Mills, D., University of Delaware, Oct. 1996.

IETF RFC-793, Transmission Control Protocol – DARPA Internet Program Protocol Specification, Postel, Jon (editor), University of Southern California, Information Sciences Institute, Sept. 1981. This and other related TCP/IP requests for comments (RFCs) are available as IETF publications. See also books about TCP/IP by Comer [B1]¹⁰ and other authors.

IrDA Serial Infrared Link Access Protocol (IrLAP).¹¹

³ANSI publications are available from the Sales Department, American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036, USA (<http://www.ansi.org/>). EIA publications are available from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112, USA (<http://global.ihs.com/>).

⁴CEN publications are available from CEN publications are available from the European Committee for Standardization (CEN), 36, rue de Stassart, B-1050 Brussels, Belgium (<http://www.cenorm.be>).

⁵IEC publications are available from the Sales Department of the International Electrotechnical Commission, Case Postale 131, 3, rue de Varembé, CH-1211, Genève 20, Switzerland/Suisse (<http://www.iec.ch/>). IEC publications are also available in the United States from the Sales Department, American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036, USA (<http://www.ansi.org/>).

⁶IEEE publications are available from the Institute of Electrical and Electronics Engineers, Inc., 445 Hoes Lane, Piscataway, NJ 08854, USA (<http://standards.ieee.org/>).

⁷The IEEE standards or products referred to in this clause are trademarks of the Institute of Electrical and Electronics Engineers, Inc.

⁸IETF publications are available from the Internet Engineering Task Force (<http://www.ietf.org/>).

⁹Information on the Network Time Protocol (NTP) is available at <http://www.eecis.udel.edu/~ntp/>.

¹⁰The numbers in brackets correspond to the bibliographical items listed in Annex I.

¹¹IrDA publications are available at <http://www.irda.org>.

IrDA Serial Infrared Link Access Protocol Specification for 16 Mbit/s Addition (VFIR).

IrDA Serial Infrared Link Management Protocol.

IrDA Serial Infrared Physical Layer Specification, version 1.3, Oct. 15, 1998.

IrDA Tiny TP: A Flow-Control Mechanism for use with IrLMP.

ISO/IEC 8802-3, Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Specific requirements — Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications.¹²

NCCLS *Point-of-Care Connectivity; Approved Standard*. NCCLS document POCT1-A [ISBN 1-56238-450-3].¹³

3. Definitions, acronyms, and abbreviations

3.1 Definitions

For the purposes of this standard, the following terms and definitions apply. IEEE 100™, *The Authoritative Dictionary of IEEE Standards Terms and Definitions*, Seventh Edition [B4], should be referenced for terms not defined in this clause.

3.1.1 10BASE-T: ISO/IEC 8802-3 and IEEE Std 802.3 physical layer specification for Ethernet over two pairs of unshielded twisted pair (UTP) media at 10 Mbit/s.

3.1.2 access point (AP): A subsystem that consolidates data from one or more point-of-care (POC) devices onto another communication link.

NOTE—Examples of APs include a multiport concentrator or a dedicated single-port AP, typically connected to a local area network (LAN), or an AP that is part of a multifunctional device such as a patient monitor or personal computer (PC).¹⁴

3.1.3 access point (AP) interface: The interface (principally input) to an AP or concentrator.

NOTE—This term is used extensively in the National Committee for Clinical Laboratory Standards *Point-of-Care Connectivity; Approved Standard* (NCCLS POCT1) and is equivalent to an ISO/IEEE 11073 bedside communications controller (BCC).

3.1.4 baud (Bd): A unit of signaling speed, expressed as the number of times per second the signal can change the electrical state of the transmission line or other medium.

NOTE—Depending on the encoding strategies, a signal event may represent a single bit, more, or less, than one bit.

3.1.5 bedside communications controller (BCC): A communications controller, typically located at a patient bedside, that serves to interface between one or more medical devices associated with a single patient. The BCC may be embedded into local display, monitoring, or control equipment. Alternatively, it may be part of a communications router to a remote hospital host computer system.

¹²ISO/IEC publications are available from the ISO Central Secretariat, Case Postale 56, 1 rue de Varembe, CH-1211, Genève 20, Switzerland/Suisse (<http://www.iso.ch/>). ISO/IEC publications are also available in the United States from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112, USA (<http://global.ihs.com/>). Electronic copies are available in the United States from the American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036, USA (<http://www.ansi.org/>).

¹³NCCLS documents are available from NCCLS, 940 West Valley Road, Suite 1440, Wayne, PA 19087-1898, USA. (NCCLS was formerly known as the National Committee for Clinical Laboratory Standards.)

¹⁴Notes in text, tables, and figures are given for information only and do not contain requirements needed to implement this standard.