

First edition
2015-03-01

Corrected version
2017-11

**Health informatics — Personal health
device communication —**

**Part 10442:
Device specialization — Strength
fitness equipment**

*Informatique de santé — Communication entre dispositifs de santé
personnels —*

*Partie 10442: Spécialisation des dispositifs — Équipement de mise en
forme musculaire*

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Reference number
ISO/IEEE 11073-10442:2015(E)

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CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
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www.iso.org

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

stds.ipr@ieee.org
www.ieee.org

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Health informatics—Personal health device communication

**Part 10442: Device specialization—
Strength fitness equipment**

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Approved 26 September 2008

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Abstract: Within the context of the ISO/IEEE 11073 family of standards for device communication, this standard establishes a normative definition of the communication between personal strength fitness devices and managers (e.g., cell phones, personal computers, personal health appliances, and set top boxes) in a manner that enables plug-and-play interoperability. It leverages appropriate portions of existing standards including ISO/IEEE 11073 terminology and information models. It specifies the use of specific term codes, formats, and behaviors in telehealth environments restricting optionality in base frameworks in favor of interoperability. This standard defines a common core of communication functionality for personal telehealth strength fitness devices. In this context, strength fitness devices are being used broadly to cover strength fitness devices that measure musculo-skeletal strength-conditioning activities.

Keywords: medical device communication, personal health devices, strength fitness equipment

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PDF: ISBN 978-0-7381-5822-8 STD95840
Print: ISBN 978-0-7381-5823-5 STDPD95840

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Introduction

This introduction is not part of IEEE Std 11073-10442-2008, Health informatics—Personal health device communication—Part 10442: Device specialization—Strength fitness equipment.

ISO/IEEE 11073 standards enable communication between medical devices and external computer systems. This document uses the optimized framework created in IEEE Std 11073-20601^a and describes a specific, interoperable communication approach for strength fitness equipment. These standards align with and draw on the existing clinically focused standards to provide easy management of data from either clinical or personal health devices.

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^a For information on references, see Clause 2.

Participants

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Douglas P. Bogia, *Chair*

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Karsten Aalders	Jack Harrington	Jayant Parthasarathy
Charles R. Abbruscato	Kai Hassing	Phillip E. Pash
Maher Abuzaid	Hiroshi Hayashi	Thomas Plasa
Manfred Aigner	Torstein Heggebo	Arif Rahman
Murtaza Ali	Ron Hegli	Robert E. Ranslam
Deepak Ayyagari	Rose Higgins	Barry Reinhold
Merat Bagha	Kaoru Hiramatsu	Melvin I. Reynolds
Doug Baird	Allen Hobbs	Jeffrey S. Robbins
David Baker	Alex Holland	Timothy Robertson
Terry Bartlett	Kirsten Howard	Michael B. Robkin
David Bean	Robert Hoy	Bill Saltzstein
Rudy Belliard	Robert D. Hughes	Stefan Sauermann
Denis Bettini	Nick Hunn	Naveen Saxena
Ola Björnsne	Yutaka Ikeda	Paul S. Schluter
Thomas Blackadar	Philip Isaacson	Lars Schmitt
Marc Blanchet	Ho-In Jeon	Mark Schnell
Douglas P. Bogia	Chris Johnson	Richard A. Schrenker
Terry Bourk	Krishna Jonnalagadda	Aravind Seshagiri
Bernard Burg	Akiyoshi Kabe	Marco Sgroi
Lyle G. Bullock, Jr.	Steve Kahle	Mazen Shihabi
Chris Burns	Tomio Kamioka	Robert Smith
Anthony Butt	Kyung Hee Kang	Motoki Sone
Carole C. Carey	Ulf Karlsson	Emily Sopenksy
Randy Carroll	Andy Kaschl	Ryan Spring
Casper Chen	Junzo Kashiwara	Nick Steblay
James Cheng	Kohichi Kashiwagi	Lars Steubesand
Silviu Chiricescu	Ralph Kent	John (Ivo) Stivorice
Rick A. Cnossen	Kurt Kermes	Ravi Swami
Moshe Cohen	Ikuo Keshi	Xiaorong Tai
John T. Collins	John Keys	Kunihiro Takiuchi
Cory Condek	Alfred Kloos	Francis Tam
Todd Cooper	Jeongmee Koh	Haruyuyki Tatsumi
Jim DelloStritto	Alexander Kraus	Randy Thomas
Matthew d'Entremont	Falko Kuester	Brad Tipler
Kent Dicks	Nandu Kushalnagar	Bob Tripp
Jakob Ehrensvar	Daniel Lager	Gary Tschautscher
Roger M. Ellingson	Pierre Landau	Masato Tsuchid
Michihiro Enokida	Sungkee Lee	Ken Tubman
Mika Erkkilä	Yonghee Lee	Yoshihiro Uchida
Javier Escayola Calvo	Kathryn A. Lesh	Sunil Unadkat
Leonardo Estevez	Qiong Li	Alpo Värri
Laurent Falconieri	Wei-Jung Lo	Mark Walters
Gear Fisher	Sandra Martinez	Jerry P. Wang
Julie N. Fleischer	Miguel Martínez de Espronceda	Jeff Warner
Joseph W. Forler	Cámara	Toru Watsuji
Eric Freudenthal	Jim McCain	Jeff Webber
Miguel Galarra	Richard McPartland	Eric White
John Garguilo	Jinsei Miyazaki	David L. Whitlinger
Igor Gejdos	Brian Møller	Vernon C. Williams
Chris Gough	Darr Moore	Paul Williamson
Channa Gowda	Joe Morrissey	Jan Wittenber
Niclas Granqvist	Yoshihiko Motohashi	Ariton Xhafa
Jeff Guttmacher	Alex Neefus	Ricky Yang
Christian Habermann	Michael E. Nidd	Done-Sik Yoo
Michael Hagerty	Hiroaki Niwamoto	Thomas Zhao
Rickey L. Hampton	Thomas Norgall	Daidi Zhong
Sten Hanke	Yoshiteru Nozoe	Szymon Zysko
	Mikey Paradis	

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

Thomas Blackadar
Douglas P. Bogia
Lyle G. Bullock, Jr.
Randy Carroll
Keith Chow
Malcolm Clarke
Rick A. Cnossen

Julie N. Fleischer
Sergiu Goma
Randall Groves
Michael Hagerty
Kai Hassing
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Philip Isaacson

Atsushi Ito
Piotr Karocki
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Ronald C. Petersen
Chuck Powers
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Don Messina
IEEE Standards Program Manager, Document Development

Kathryn Cush
IEEE Standards Program Manager, Technical Program Development

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Health informatics—Personal health device communication

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1. Overview

1.1 Scope

Within the context of the ISO/IEEE 11073 family of standards for device communication, this standard establishes a normative definition of the communication between personal strength fitness devices and managers (e.g., cell phones, personal computers, personal health appliances, and set top boxes) in a manner that enables plug-and-play interoperability. It leverages appropriate portions of existing standards, including ISO/IEEE 11073 terminology and information models. It specifies the use of specific term codes, formats, and behaviors in telehealth environments restricting optionality in base frameworks in favor of interoperability. This standard defines a common core of communication functionality for personal telehealth strength fitness devices. In this context, strength fitness devices are being used broadly to cover strength fitness devices that measure musculo-skeletal strength-conditioning activities.

1.2 Purpose

This standard addresses a need for an openly defined, independent standard for controlling information exchange to and from personal health devices and managers (e.g., cell phones, personal computers, personal health appliances, and set top boxes). Interoperability is the key to growing the potential market for these devices and to enabling people to be better-informed participants in the management of their health.

1.3 Context

See IEEE Std 11073-20601™ for an overview of the environment within which this standard is written.

This document, IEEE Std 11073-10442 defines the device specialization for the strength fitness device, being a specific agent type, and it provides a description of the device concepts, its capabilities, and its implementation according to this standard.

This standard is based on IEEE Std 11073-20601, which in turn draws information from both ISO/IEEE 11073-10201:2004 [B3]¹ and ISO/IEEE 11073-20101:2004 [B4]. The medical device encoding rules (MDER) used within this standard are fully described in IEEE Std 11073-20601.

This standard reproduces relevant portions of the nomenclature found in ISO/IEEE 11073-10101:2004 [B2] and adds new nomenclature codes for the purposes of this standard. Between this standard and IEEE Std 11073-20601, all required nomenclature codes for implementation are documented.

NOTE—In this standard, IEEE Std 11073-104zz is used to refer to the collection of device specialization standards that utilize IEEE Std 11073-20601, where zz can be any number from 01 to 99, inclusive.²

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so that each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

IEEE Std 11073-20601™-2008, Health informatics—Personal health device communication—Part 20601: Application profile—Optimized exchange protocol.^{3,4}

See Annex A for all informative material referenced by this standard.

3. Definitions, acronyms, and abbreviations

3.1 Definitions

For the purposes of this standard, the following terms and definitions apply. The *Authoritative Dictionary of IEEE Standards Terms* [B1] should be referenced for terms not defined in this clause.

3.1.1 agent: A node that collects and transmits personal health data to an associated manager.

3.1.2 class: In object-oriented modeling, a class describes the attributes, method, and events that objects instantiated from the class utilize.

3.1.3 compute engine: See: **manager**.

3.1.4 device: A term used to refer to a physical apparatus implementing either an agent or a manager role.

¹ The numbers in brackets correspond to those of the bibliography in Annex A.

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3.1.5 handle: An unsigned 16-bit number that is locally unique and identifies one of the object instances within an agent.

3.1.6 manager: A node receiving data from one or more agent systems. Some examples of managers include a cellular phone, health appliance, set top box, or a computer system.

3.1.7 obj-handle: *See: handle.*

3.1.8 object: In object-oriented modeling, a particular instantiation of a class. The instantiation realizes attributes, methods, and event from the class.

3.1.9 personal health device: A device used in personal health applications.

3.1.10 personal telehealth device: *See: personal health device.*

3.2 Acronyms and abbreviations

APDU	application protocol data unit
ASN.1	Abstract Syntax Notation One
DIM	domain information model
EUI-64	extended unique identifier (64 bits)
ICS	implementation conformance statement
MDC	medical device communication
MDER	medical device encoding rules
MDS	medical device system
MOC	medical object class
OID	object identifier
PDU	protocol data unit
PHD	personal health device
RT-SA	real-time sample array
VMO	virtual medical object
VMS	virtual medical system

4. Introduction to ISO/IEEE 11073 personal health devices

4.1 General

This standard and the remainder of the series of ISO/IEEE 11073 personal health device (PHD) standards fit in the larger context of the ISO/IEEE 11073 series of standards. The full suite of standards enables agents to interconnect and interoperate with managers and with computerized health-care information systems. See IEEE Std 11073-20601 for a description of the guiding principles for this series of ISO/IEEE 11073 personal health device standards.

IEEE Std 11073-20601 supports the modeling and implementation of an extensive set of personal health devices. This standard defines aspects of the strength fitness device. It describes all aspects necessary to implement the application layer services and data exchange protocol between an ISO/IEEE 11073 PHD strength fitness agent and a manager. This standard defines a subset of the objects and functionality contained in IEEE Std 11073-20601 and extends and adds definitions where appropriate. All new definitions are given in Annex B in Abstract Syntax Notation One (ASN.1). Nomenclature codes referenced in this standard, which are not defined in IEEE Std 11073-20601, are normatively defined in Annex C.