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# Health informatics — Personal health device communication —

## Part 10417: Device specialization — Glucose meter

*Informatique de santé — Communication entre dispositifs médicaux sur le site des soins —*

*Partie 10417: Spécialisation des dispositifs — Glucomètre*

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**IEEE Std 11073-10417™-2015**

**(Revision of
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## Health informatics—Personal health device communication

# Part 10417: Device Specialization—Glucose Meter

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Approved 11 June 2015

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**Abstract:** Within the context of the ISO/IEEE 11073 family of standards for device communication, a normative definition of communication between personal telehealth glucose meter devices and compute engines (e.g., cell phones, personal computers, personal health appliances, and set top boxes) is established by this standard in a manner that enables plug-and-play interoperability. Appropriate portions of existing standards are leveraged, including ISO/IEEE 11073 terminology, information models, application profile standards, and transport standards. The use of specific term codes, formats, and behaviors in telehealth environments restricting optionality in base frameworks in favor of interoperability are specified. A common core of communication functionality for personal telehealth glucose meters is defined in this standard.

**Keywords:** glucose meter, IEEE 11073-10417™, medical device communication, personal health devices

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## Introduction

This introduction is not part of IEEE Std 11073-10417™-2015, Health informatics—Personal health device communication—Part 10417: Device Specialization—Glucose Meter.

ISO/IEEE 11073 standards enable communication between medical devices and external computer systems. This document uses the optimized framework created in IEEE Std 11073-20601-2015[a] and describes a specific, interoperable communication approach for glucose meters. These standards align with and draw on the existing clinically focused standards to provide support for communication of data from clinical or personal health devices.

[a]For information on references, see Clause 2.


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## Health informatics—Personal health device communication

# Part 10417: Device Specialization—Glucose Meter

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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 communication between personal telehealth glucose meter devices and compute engines (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, information models, application profile standards, and transport standards. 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 glucose meters.

### 1.2 Purpose

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


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### 1.3 Context

See IEEE Std 11073-20601™-2014[1] for an overview of the environment within which this standard is written.

This standard defines the device specialization for the insulin pump, being a specific agent type, and 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™-2014[2] which in turn draws information from both ISO/IEEE 11073-10201:2004 [B3][3] and ISO/IEEE 11073-20101:2004 [B4]. The medical device encoding rules (MDERs) used within this standard are fully described in Annex F of IEEE Std 11073-20601-2014.

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. Among this standard and IEEE Std 11073-20601-2014, all required nomenclature codes for implementation are documented.

NOTE—In this standard, ISO/IEEE 11073-104zz is used to refer to the collection of device specialization standards that utilize IEEE Std 11073-20601-2014, where zz can be any number from 01 to 99, inclusive.[4]

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IEEE Std 11073-20601-2014, Health informatics—Personal health device communication—Application Profile—Optimized Exchange Protocol.[5, 6]

## 3. Definitions, acronyms, and abbreviations

### 3.1 Definitions

For the purposes of this document, the following terms and definitions apply. The *IEEE Standards Dictionary Online* should be consulted for terms not defined in this clause.[7]

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

**class:** In object-oriented modeling, it describes the attributes, methods, and events that objects instantiated from the class utilize.

[1] Information on references can be found in Clause 2.
[2] ISO/IEEE publications are available from the ISO Central Secretariat, 1, ch. de la Voie-Creuse, Case postale 56, CH-1211, Geneva 20, Switzerland (http://www.iso.ch/). ISO/IEEE publications are also available in the United States from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, Piscataway, NJ 08854-4141, USA (http://standards.ieee.org/).
[3] The numbers in brackets correspond to those of the bibliography in Annex A.
[4] Notes in text, tables, and figures are given for information only and do not contain requirements needed to implement the standard.
[5] The IEEE standards or products referred to in this clause are trademarks of the Institute of Electrical and Electronics Engineers, Inc.
[6] IEEE publications are available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, Piscataway, NJ 08854-4141, USA (http://standards.ieee.org/).
[7] *IEEE Standards Dictionary Online subscription* is available at:
http://www.ieee.org/portal/innovate/products/standard/standards_dictionary.html.


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

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

**glucagon:** Naturally occurring hormone released by the pancreas when glucose levels are low.

**glucose:** Commonly referred to as "sugar," it is the major source of energy used by the body cells.

**glucose meter:** A medical device for determining the approximate concentration of glucose in the blood.

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

**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 computer system.

**obj-handle:** *See:* **handle**.

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

**occlusion:** Total obstruction of the infusion set that prevents administering insulin.

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

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

## 3.2 Acronyms and abbreviations

| | |
|---|---|
| APDU | application protocol data unit |
| ASN.1 | Abstract Syntax Notation One |
| AST | alternative site testing |
| DIM | domain information model |
| EUI-64 | extended unique identifier (64 bits) |
| HbA1c | hemoglobin bound to glucose (the A1c form) |
| HCP | health care provider |
| ICS | implementation conformance statements |
| ISF | insulin sensitivity factor |
| MDC | medical device communication |
| MDER | medical device encoding rules |
| MDS | medical device system |
| MOC | managed object class |
| OID | object identifier |
| PDU | protocol data unit |
| PHD | personal health device |
| VMO | virtual medical object |
| VMS | virtual medical system |


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