MITTEINVASIIVSED SFÜGMOMANOMEETRID. OSA 2: KATKENDLIKU AUTOMATISEERITUD MÕÕTEVIISI KLIINILISED UURINGUD

Non-invasive sphygmomanometers - Part 2: Clinical investigation of intermittent automated measurement type (ISO 81060-2:2018 +

ISO 81060-2:2018/Amd 1:2020 +

ISO 81060-2:2018/Amd 2:2024)



### **EESTI STANDARDI EESSÕNA**

### **NATIONAL FOREWORD**

See Eesti standard EVS-EN ISO 81060-2:2019+A1 +A2:2024 sisaldab Euroopa standardi EN ISO 81060-2:2019 ja selle muudatuste A1:2020 ja A2:2024 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 81060-2:2019+A1+A2:2024 consists of the English text of the European standard EN ISO 81060-2:2019 and its amendments A1:2020 and A2:2024.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 27.11.2019, muudatused A1 16.09.2020 ja A2 03.04.2024.	Date of Availability of the European standard is 27.11.2019, for A1 16.09.2020 and A2 03.04.2024.
Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega [A1].	The start and finish of text introduced or altered by amendment A1 is indicated in the text by tags  [A] (A1).
Muudatusega A2 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega 🕰 🤼	The start and finish of text introduced or altered by amendment A2 is indicated in the text by tags  [A2] [A2].
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ICS 11.040.10

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**EUROPÄISCHE NORM** 

## EN ISO 81060-2 + A1 +A2

November 2019, September 2020, April 2024

ICS 11.040.10

Supersedes EN ISO 81060-2:2014

### **English Version**

Non-invasive sphygmomanometers - Part 2: Clinical investigation of intermittent automated measurement type (ISO 81060-2:2018 + ISO 81060-2:2018/Amd 1:2020 + ISO 81060-2:2018/Amd 2:2024)

Sphygmomanomètres non invasifs - Partie 2: Investigation clinique pour type ponctuel à mesurage automatique (ISO 81060-2:2018 + ISO 81060-2:2018/Amd 1:2020 + ISO 81060-2:2018/Amd 2:2024)

Nichtinvasive Blutdruckmessgeräte - Teil 2: Klinische Prüfung der intermittierenden automatisierten Bauart (ISO 81060-2:2018 + ISO 81060-2:2018/Amd 1:2020 + ISO 81060-2:2018/Amd 2:2024)

This European Standard was approved by CEN on 20 November 2019. Amendment A1 was approved by CEN on 17 August 2020. Amendment A2 was approved by CEN on 26 February 2024.

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This European Standard and its Amendments A1 and A2 exist 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 CEN-CENELEC Management Centre has the same status as the official versions.

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

## **European foreword**

This document (EN ISO 81060-2:2019) has been prepared by Technical Committee ISO/TC 121 "Anaesthetic and respiratory equipment" in collaboration with Technical Committee CEN/TC 205 "Non-active medical devices" the secretariat of which is held by DIN.

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 May 2020, and conflicting national standards shall be withdrawn at the latest by November 2022.

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This document supersedes EN ISO 81060-2:2014.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZA, which is an integral part of this document.

The following referenced documents are indispensable for the application of this document. For undated references, the latest edition of the referenced document (including any amendments) applies. For dated references, only the edition cited applies. However, for any use of this standard "within the meaning of Annex ZA", the user should always check that any referenced document has not been superseded and that its relevant contents can still be considered the generally acknowledged state-of-art.

When the ISO or IEC standard is referred to in the ISO text standard, this must be understood as a normative reference to the parallel EN standard or dated ISO standard, as outlined below, including the foreword and the Annexes ZZ.

NOTE The way in which these references documents are cited in normative requirements determines the extent (in whole or in part) to which they apply.

Table — Correlations between normative references and dated EN and ISO/IEC standards

Normative references as listed in	Equivalent dated standard		
Clause 2	EN	ISO/IEC	
ISO 14155:2011	EN ISO 14155:2011	ISO 14155:2011	
ISO 14971:2007	EN ISO 14971:2012	ISO 14971:2007	
ISO 16142-1:2016	-	ISO 16142-1:2016	
IEC 60601-1:2005+AMD1:2012	EN 60601-1:2006 +AMD1:2013 +AMD12:2014	IEC 60601-1:2005 +AMD1:2012	
IEC 60601-1-11:2015	EN 60601-1-11:2015	IEC 60601-1-11:2015	
IEC 60601-2-34:2011	EN 60601-2-34:2014	IEC 60601-2-34:2011	
IEC 80601-2-30:2018	EN 80601-2-30:2019	IEC 80601-2-30:2018	
ISO 81060-1:2007	EN ISO 81060-1:2012	ISO 81060-1:2007	

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## **Endorsement notice**

The state of the s The text of ISO 81060-2:2018 has been approved by CEN as EN ISO 81060-2:2019 without any modification.

## An Amendment A1 European foreword

The text of ISO 81060-2:2018/Amd 1:2020 has been prepared by Technical Committee ISO/TC 121 "Anaesthetic and respiratory equipment" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 81060-2:2019/A1:2020 by Technical Committee CEN/TC 205 "Non-active medical devices" the secretariat of which is held by DIN.

This Amendment to the European Standard EN ISO 81060-2:2019 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2021, and conflicting national standards shall be withdrawn at the latest by March 2021.

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## Amendment A2 European foreword

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### **Endorsement notice**

The text of ISO 81060-2:2018/Amd 2:2024 has been approved by CEN as EN ISO 81060-2:2019/A2:2024 without any modification.

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Con	tents	;		Page	
Fore	word			v	
A <sub>1</sub> > <b>A</b>	mendr	ent A1 fo	oreword 街	vi	
			oreword 🕰		
Intro	duction	n		viii	
1	Scop	e		1	
2	_		ferences		
3	Tern	ns and de	finitions	2	
4	Gene	eral requi	irements for CLINICAL INVESTIGATIONS	3	
	4.1		AL INVESTIGATION methods		
	4.2		linical practice		
	4.3		of previous CLINICAL INVESTIGATIONS		
	4.4		sure of summary of CLINICAL INVESTIGATION		
5	CLINI		TIGATION with an auscultatory REFERENCE SPHYGMOMANOMETER		
	5.1	Subjec	t requirements	4	
	5.1	5.1.1	* Number		
		5.1.2	* Gender distribution		
		5.1.3	* Age distribution		
		5.1.4	* Limb size distribution		
		5.1.5	Blood pressure distribution		
		5.1.6	* Special PATIENT populations		
	5.2	CLINICA	AL INVESTIGATION method with a REFERENCE SPHYGMOMANOMETER		
		5.2.1	* Subject preparation	7	
		5.2.2	* Observer preparation	8	
		5.2.3	* Reference readings		
		5.2.4	CLINICAL INVESTIGATION methods		
		5.2.5	* Additional requirements for a SPHYGMOMANOMETER intended for use in $\epsilon$		
			stress testing environments	17	
		5.2.6	* Additional requirements for a SPHYGMOMANOMETER intended for use in		
			ambulatory monitoring	18	
6	CLINI	CAL INVES	TIGATION with reference invasive blood pressure monitoring equipmen	т 19	
	6.1	PATIEN	T requirements		
		6.1.1	Number		
		6.1.2	* Gender distribution		
		6.1.3	* Age distribution		
		6.1.4	A2) * Limb size distribution (A2)	21	
		6.1.5	BLOOD PRESSURE distribution		
		6.1.6	Special PATIENT populations		
	6.2	6.2 CLINICAL INVESTIGATION methods with REFERENCE INVASIVE BLOOD PRESSURE MONITORIN			
		EQUIPMENT			
		6.2.1	* REFERENCE measurement		
		6.2.2 6.2.3	* Arterial REFERENCE site		
		6.2.4	* Determining the REFERENCE BLOOD PRESSURE		
		6.2.5	Determining the error of the BLOOD PRESSURE measurement		
		6.2.6	Data analysis		
		6.2.7	MEAN ARTERIAL PRESSURE (MAP)		

7 * Pregnant PATIENT pop	ulations	27
	e and guidance	
Annex B (informative) Reference	ce to the ESSENTIAL PRINCIPLES	36
Annex C (informative) Termino	logy — alphabetized index of defined terms	37
requirements of Directi	onship between this European Standard and the essential ve 93/42/EEC [OJ L 169] aimed to be covered	38
Bibliography		40
Bibliography	Sont is a provious service of the se	
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### Foreword

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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 document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see <a href="www.iso.org/directives">www.iso.org/directives</a>).

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This document was prepared jointly by Technical Committee ISO/TC 121, Anaesthetic and respiratory equipment, Subcommittee SC 3, Respiratory devices and related equipment used for patient care, and Technical Committee IEC/TC 62, Electrical equipment in medical practice, Subcommittee SC D, Electromedical equipment.

This third edition cancels and replaces the second edition (ISO 81060-2:2013), which has been technically revised.

The main changes compared to the previous edition are as follows:

- same arm simultaneous method has been deleted;
- numerous clarifications have been added and kPa equivalent values for the mmHg values have been included.

A list of all parts in the ISO/IEC 81060 series can be found on the ISO website.

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This document was prepared jointly by Technical Committee ISO/TC 121, Anaesthetic and respiratory equipment, Subcommittee SC 3, Respiratory devices and related equipment used for patient care, and Technical Committee IEC/TC 62, Electrical equipment in medical practice, Subcommittee SC D, Electromedical equipment.

A list of all parts in the ISO 81060 series and in the IEC 81060 series can be found on the ISO website.

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## Amendment A2 foreword

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ISO and IEC draw attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO and IEC take no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO and IEC had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <a href="https://patents.iec.ch">www.iso.org/patents</a> and <a href="https://patents.iec.ch">https://patents.iec.ch</a>. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

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This document was prepared jointly by Technical Committee ISO/TC 121, Anaesthetic and respiratory equipment, Subcommittee SC 3, Respiratory devices and related equipment used for patient care, and Technical Committee IEC/TC 62, Medical equipment, software, and systems, Subcommittee SC 62D, Particular medical equipment, software, and systems, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 205, Non-active medical devices, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 81060 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 <a href="www.iso.org/members.html">www.iso.org/members.html</a> and <a href="www.iec.ch/national-committees">www.iec.ch/national-committees</a>. <a href="#www.iec.ch/national-committees">#www.iec.ch/national-committees</a>.

### Introduction

Determining BLOOD PRESSURE is an important PROCEDURE that is clinically used to assess the status of a PATIENT.

BLOOD PRESSURE serves as aid to control the drug titration and fluid management and to provide warning about the changes in PATIENT'S state of health.

Frequently determining BLOOD PRESSURE is routine during anaesthesia. BLOOD PRESSURE serves to aid to control drug titration and fluid management and to provide warning about the changes in the PATIENT'S state of health.

In this document, the following print types are used:

- requirements, compliance with which can be verified, and definitions: roman type;
- informative material appearing outside of tables, such as notes, examples and references: in smaller roman type. Normative text of tables is also in a smaller roman type;
- test methods: italic type; and
- TERMS DEFINED IN CLAUSE 3 OF THE GENERAL STANDARD, IN THIS DOCUMENT OR AS NOTED: SMALL CAPITALS TYPE.

In this document, the conjunctive "or" is used as an "inclusive or" so a statement is true if any combination of the conditions is true.

The verbal forms used in this document conform to usage described in Annex H of the ISO/IEC Directives, Part 2. For the purposes of this document, the auxiliary verb:

- "shall" means that compliance with a requirement or a test is mandatory for compliance with this document;
- "should" means that compliance with a requirement or a test is recommended but is not mandatory for compliance with this document;
- "may" is used to describe a permissible way to achieve compliance with a requirement or test.

An asterisk (\*) as the first character of a title or at the beginning of a paragraph or table title indicates that there is guidance or rationale related to that item in Annex A.

Annex B maps the clauses and subclauses of this document with the ESSENTIAL PRINCIPLES of ISO 16142-1:2016.

## Non-invasive sphygmomanometers —

## Part 2:

# Clinical investigation of the intermittent automated measurement type

### 1 Scope

This document specifies the requirements and methods for the CLINICAL INVESTIGATION of ME EQUIPMENT used for the INTERMITTENT non-invasive automated estimation of the arterial BLOOD PRESSURE by utilizing a CUFF.

This document is applicable to all SPHYGMOMANOMETERS that sense or display pulsations, flow or sounds for the estimation, display or recording of BLOOD PRESSURE. These SPHYGMOMANOMETERS need not have automatic CUFF inflation.

This document covers SPHYGMOMANOMETERS intended for use in all PATIENT populations (e.g. all age and weight ranges), and all conditions of use (e.g. ambulatory BLOOD PRESSURE monitoring, stress testing BLOOD PRESSURE monitoring and BLOOD PRESSURE monitors for the HOME HEALTHCARE ENVIRONMENT for self-measurement as well as use in a professional healthcare facility).

EXAMPLE AUTOMATED SPHYGMOMANOMETER as given in IEC 80601-2-30 undergoing CLINICAL INVESTIGATION according to this document.

This document specifies additional disclosure requirements for the ACCOMPANYING DOCUMENTS of SPHYGMOMANOMETERS that have passed a CLINICAL INVESTIGATION according to this document.

This document is not applicable to CLINICAL INVESTIGATIONS of NON-AUTOMATED SPHYGMOMANOMETERS as given in ISO 81060-1 or INVASIVE BLOOD PRESSURE MONITORING EQUIPMENT as given in IEC 60601-2-34.

This document is not applicable to CLINICAL INVESTIGATIONS of a set of CUFFS that are not of same materials and construction. Each type of CUFF set is required to be evaluated separately according to this document. (42)

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 The way in which these referenced documents are cited in normative requirements determines the extent (in whole or in part) to which they apply.

NOTE 2 Informative references are listed in the Bibliography.

ISO 14155:2011, Clinical investigation of medical devices for human subjects — Good clinical practice

ISO 14971:2007, Medical devices — Application of risk management to medical devices

ISO 16142-1:2016, Medical devices — Recognized essential principles of safety and performance of medical devices — Part 1: General essential principles and additional specific essential principles for all non-IVD medical devices and guidance on the selection of standards

ISO 81060-1:2007, Non-invasive sphygmomanometers — Part 1: Requirements and test methods for non-automated measurement type

IEC 60601-1:2005+Amendment 1:2012, Medical electrical equipment — Part 1: General requirements for basic safety and essential performance

IEC 60601-1-11:2015, Medical electrical equipment — Part 1-11: General requirements for basic safety and essential performance — Collateral standard: Requirements for medical electrical equipment and medical electrical systems used in home care applications

IEC 60601-2-34:2011, Medical electrical equipment — Part 2-34: Particular requirements for the basic safety and essential performance of invasive blood pressure monitoring equipment

IEC 80601-2-30:2018, Medical electrical equipment — Part 2-30: Particular requirements for basic safety and essential performance of automated non-invasive sphygmomanometers

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14155:2011, ISO 14971:2007, ISO 16142-1:2016, ISO 81060-1:2007, IEC 60601-1:2005+AMD1:2012, IEC 60601-1-11:2015, IEC 60601-2-34:2011 and IEC 80601-2-30:2018, and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <a href="https://www.iso.org/obp">https://www.iso.org/obp</a>
- IEC Electropedia: available at http://www.electropedia.org/

NOTE For convenience, an alphabetized index of defined terms is found in Annex C.

### 3.1

### intermittent

<non-invasive SPHYGMOMANOMETER> utilizing a PROCESS of estimating BLOOD PRESSURE that provides a
single set of pressure values from a number of heart beats

### 3.2

### reference

### ref

established accuracy used for the CLINICAL INVESTIGATION of other instruments

### 3.3

### sphygmomanometer

ME EQUIPMENT for non-invasive estimation of systemic arterial BLOOD PRESSURE

### 3.4

### sphygmomanometer-under-test

### sut

AUTOMATED SPHYGMOMANOMETER undergoing CLINICAL INVESTIGATION

### $A_1$ 3.5

### TOTAL LIMB CIRCUMFERENCE RANGE

range, from the smallest limb circumference to the largest limb circumference, intended by the MANUFACTURER for use with the AUTOMATED SPHYGMOMANOMETER [A]