

© Copyright SEK. Reproduction in any form without permission is prohibited.

Storheter och enheter –

Del 14: Telebiometri relaterad till människans fysiologi

Quantities and units –

Part 14: Telebiometrics related to human physiology

Som svensk standard gäller europastandarden EN 80000-14:2009. Den svenska standarden innehåller den officiella engelska språkversionen av EN 80000-14:2009.

Nationellt förord

Europastandarden EN 80000-14:2009

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 80000-14, First edition, 2008 - Quantities and units - Part 14: Telebiometrics related to human physiology**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 01.060

Denna standard är fastställd av SEK Svensk Elstandard, som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: SEK, Box 1284, 164 29 KISTA
Telefon: 08 - 444 14 00. Telefax: 08 - 444 14 30
E-post: sek@elstandard.se. Internet: www.elstandard.se

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

SEK Svensk Elstandard

Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

**Quantities and units -
Part 14: Telebiometrics related to human physiology
(IEC 80000-14:2008)**

Grandeurs et unités -
Partie 14: Télébiométrie
relative à la physiologie humaine
(CEI 80000-14:2008)

Größen und Einheiten -
Teil 14: Telebiometrische Identifizierung
unter den Bedingungen
der Physiologie des Menschen
(IEC 80000-14:2008)

This European Standard was approved by CENELEC on 2009-04-01. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

Foreword

The text of the International Standard IEC 80000-14:2008, prepared by IEC TC 25, Quantities and units, in co-operation with ISO/TC 12, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 80000-14 on 2009-04-01 without any modification.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2010-04-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2012-04-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 80000-14:2008 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 80000-1	- ¹⁾	Quantities and units - Part 1: General	-	-
ISO 80000-3	2006	Quantities and units - Part 3: Space and time	-	-
ISO 80000-4	2006	Quantities and units - Part 4: Mechanics	-	-
ISO 80000-5	- ²⁾	Quantities and units - Part 5: Thermodynamics	-	-
IEC 80000-6	- ²⁾	Quantities and units - Part 6: Electromagnetism	EN 80000-6	2008 ³⁾
ISO 80000-7	- ²⁾	Quantities and units - Part 7: Light	-	-
ISO 80000-8	- ²⁾	Quantities and units - Part 8: Acoustics	EN ISO 80000-8	2007 ³⁾
ISO 80000-9	- ²⁾	Quantities and units - Part 9: Physical chemistry and molecular physics	-	-
ISO 80000-10	- ¹⁾	Quantities and units - Part 10: Atomic and nuclear physics	-	-
ITU-T Recommendation X.1081	- ²⁾	The telebiometric multimodal model - A framework for the specification of security and safety aspects of telebiometrics	-	-
VIM	2008	International Vocabulary of Metrology - Basic and General Concepts and Associated Terms	-	-

¹⁾ At draft stage.

²⁾ Undated reference.

³⁾ Valid edition at date of issue.

CONTENTS

0	Introduction	6
0.1	Arrangement of the tables	6
0.2	Tables of quantities	6
0.3	Tables of units.....	6
0.3.1	General	6
0.3.2	Units for quantities of dimension one, or dimensionless quantities	7
0.4	Numerical statements in this part of ISO/IEC 80000	7
0.5	Remark on logarithmic quantities and their units.....	7
0.6	Introduction specific to 80000-14	9
1	Scope.....	12
2	Normative references	12
3	Terms, definitions, abbreviations and symbols.....	13
3.1	General concepts	13
3.2	Thresholds	14
3.3	Safety and security.....	14
3.4	Modalities.....	15
3.5	Abbreviations	17
3.6	Symbols used in telebiometrics	17
4	Content of this part of IEC 80000.....	17
5	Quantities and units used for more than one telebiometric modality.....	18
6	Quantities and units for TANGO—IN and TANGO—OUT	26
7	Quantities and units for VIDEO—IN and VIDEO—OUT	31
7.1	Introductory text on dark adaptation	31
7.2	Quantities and units.....	32
8	Quantities and units for AUDIO—IN and AUDIO—OUT.....	40
9	Quantities and units for CHEMO—IN and CHEMO—OUT	44
10	Quantities and units for RADIO—IN and RADIO—OUT.....	48
11	Quantities and units for CALOR—IN and CALOR—OUT	50
11.1	Introductory text on body temperature	50
11.2	Quantities and Units	52
Annex A (normative)	Codes and templates for specifying thresholds.....	58
A.1	Telebiometric coding scheme for identifying thresholds	58
A.2	Table of codes for the Scientific, Sensory, and Metric Layers	58
A.3	An example of the use of the codes in a table of threshold values	59
Annex B (normative)	Construction of the telebiometric code	60
B.1	Structure of the model	60
B.2	The metric layer	60
B.3	The primary entities and their use in the Telebiometric Code	61
B.4	Closing remarks	61
Annex C (normative)	Specification of the telebiometric code and its graphical symbols.....	62
C.1	The telebiometric codes.....	62
C.2	The graphics symbols for codes of telebiometric device.....	63
C.2.1	First page of chart	64
C.2.2	Middle of chart	65

C.2.3 End of chart.....	66
Annex D (informative) Explanatory notes	67
D.1 Unimodal and multimodal wetware interaction	67
D.2 Wetware protocols.....	67
D.3 Semi-open telebiometric systems	67
D.4 Technophobia.....	67
Bibliography.....	68

LIST OF FIGURES

Figure 1 – Schematic drawing of a cross-section of glabrous skin	10
Figure 2 – Schematic drawing of a cross-section of hairy skin.....	10
Figure 3 – Detection thresholds for vibration contactors, measured at the thenar eminence in decibels per peak with reference to 1,0 μm	30
Figure 4 – Subjective magnitude of vibration in assigned numbers as a function of vibration amplitude in decibels per peak with reference to 1,0 μm	31
Figure 5 – Spectral sensitivity of the eye.....	36
Figure 6 – Temporal summation – Bloch law	37
Figure 7 – Threshold of the fovea and periphery of the eye for detection of a test flash using a white disc after dark adaptation (see [9])	38
Figure 8 – Spatial summation.....	39
Figure 9 – Thresholds as a function of frequency.....	42
Figure 10 – Subjective magnitude in assigned numbers as a function of sound pressure level in decibels.....	43

LIST OF TABLES

Table 1 – Quantities, units, and definitions for multiple modalities.....	18
Table 2 – Quantities, units, and definitions for the TANGO modality.....	26
Table 3 – Quantities, units, and definitions for the VIDEO modality	32
Table 4 – Quantities, units, and definitions for the AUDIO modality.....	40
Table 5 – Quantities, units, and definitions for the CHEMO modality	44
Table 6 – Quantities, units, and definitions for the RADIO modality.....	48
Table 7 – Quantities, units, and definitions for the CALOR modality	52
Table A.1 – Primary entities and their codes for the scientific layer	58
Table A.2 – Primary entities and their codes for the sensory layer	58
Table A.3 – Examples of primary entities and their codes for the metric layer	59
Table A.4 – Telebiometric code of sample phenomena	59
Table C.1 – Part of the table of all combinations of human-machine IN and OUT interaction states and all types of possible telebiometric unimodal and multimodal devices..	62

0 Introduction

Subclauses 0.1 to 0.5 are text that is common to many Parts of ISO/IEC 80000. Some of this text is not applicable to this Part of ISO/IEC 80000, but is included for consistency with other parts. Subclause 0.6 is specific to this part of ISO/IEC 80000.

0.1 Arrangement of the tables

The tables of quantities and units in ISO/IEC 80000 are arranged so that the quantities are presented on the left-hand pages and the units on the corresponding right-hand pages.

All units between two full lines on the right-hand pages belong to the quantities between the corresponding full lines on the left-hand pages.

Where the numbering of an item has been changed in the revision of a part of ISO 31, the number in the preceding edition is shown in parenthesis on the left-hand page under the new number for the quantity; a dash is used to indicate that the quantity in question did not appear in the preceding edition.

0.2 Tables of quantities

The names in English and in French of the most important quantities within the field of this part of ISO/IEC 80000 are given together with their symbols and, in most cases, definitions. These names and symbols are recommendations. The definitions are given for identification of the quantities in the International System of Quantities (ISQ), listed on the left hand pages of the Tables in this part of ISO/IEC 80000; they are not intended to be complete.

The scalar, vectorial or tensorial character of quantities is pointed out, especially when this is needed for the definitions.

In most cases only one name and only one symbol for the quantity are given; where two or more names or two or more symbols are given for one quantity and no special distinction is made, they are on an equal footing. When two types of italic letters exist (for example as with ϑ and θ ; φ and ϕ ; a and α ; g and g) only one of these is given. This does not mean that the other is not equally acceptable. It is recommended that such variants should not be given different meanings. A symbol within parenthesis implies that it is a reserve symbol, to be used when, in a particular context, the main symbol is in use with a different meaning.

In this English edition the quantity names in French are printed in an italic font, and are preceded by *fr*. The gender of the French name is indicated by (m) for masculine and (f) for feminine, immediately after the noun in the French name.

0.3 Tables of units

0.3.1 General

The names of units for the corresponding quantities are given together with the international symbols and the definitions. These unit names are language-dependent, but the symbols are international and the same in all languages. For further information, see the SI Brochure (8th edition 2006) from BIPM and ISO 80000-1.

The units are arranged in the following way:

- a) The coherent SI units are given first. The SI units have been adopted by the General Conference on Weights and Measures (Conférence Générale des Poids et Mesures, CGPM). The coherent SI units, and their decimal multiples and submultiples formed with the SI prefixes, are recommended, although the decimal multiples and submultiples are not explicitly mentioned.
- b) Some non-SI units are then given, being those accepted by the International Committee for Weights and Measures (Comité International des Poids et Mesures, CIPM), or by the International Organization of Legal Metrology (Organisation Internationale de Métrologie Légale, OIML), or by ISO and IEC, for use with the SI. Such units are separated from the SI units in the item by use of a broken line between the SI units and the other units.

- c) Non-SI units currently accepted by the CIPM for use with the SI are given in small print (smaller than the text size) in the “Conversion factors and remarks” column.
- d) Non-SI units that are not recommended are given only in annexes in some parts of ISO/IEC 80000. These annexes are informative, in the first place for the conversion factors, and are not integral parts of the standard. These deprecated units are arranged in two groups:
 - 1) units in the CGS system with special names;
 - 2) units based on the foot, pound, second, and some other related units;
- e) Other non-SI units given for information, especially regarding the conversion factors are given in another informative annex.

0.3.2 Units for quantities of dimension one, or dimensionless quantities

The coherent unit for any quantity of dimension one, also called a dimensionless quantity, is the number one, symbol 1. When the value of such a quantity is expressed, the unit symbol 1 is generally not written out explicitly.

EXAMPLE 1 Refractive index $n = 1,53 \times 1 = 1,53$

Prefixes shall not be used to form multiples or submultiples of this unit. Instead of prefixes, powers of 10 are recommended.

EXAMPLE 2 Reynolds number $Re = 1,32 \times 10^3$

Considering that plane angle is generally expressed as the ratio of two lengths and solid angle as the ratio of two areas, in 1995 the CGPM specified that, in the SI, the radian, symbol rad, and steradian, symbol sr, are dimensionless derived units. This implies that the quantities plane angle and solid angle are considered as derived quantities of dimension one. The units radian and steradian are thus equal to one; they may either be omitted, or they may be used in expressions for derived units to facilitate distinction between quantities of different kind but having the same dimension.

0.4 Numerical statements in this part of ISO/IEC 80000

The sign = is used to denote “is exactly equal to”, the sign $\approx$ is used to denote “is approximately equal to”, and the sign := is used to denote “is by definition equal to”.

Numerical values of physical quantities that have been experimentally determined always have an associated measurement uncertainty. This uncertainty should always be specified. In this part of ISO/IEC 80000, the magnitude of the uncertainty is represented as in the following example.

EXAMPLE $l = 2,347\,82(32)\text{ m}$

In this example, $l = a(b)\text{ m}$, the numerical value of the uncertainty b indicated in parentheses is assumed to apply to the last (and least significant) digits of the numerical value a of the length l . This notation is used when b represents one standard uncertainty (estimated standard deviation) in the last digits of a . The numerical example given above may be interpreted to mean that the best estimate of the numerical value of the length l when l is expressed in the unit metre is 2,347 82 and that the unknown value of l is believed to lie between $(2,347\,82 - 0,000\,32)\text{ m}$ and $(2,347\,82 + 0,000\,32)\text{ m}$ with a probability determined by the standard uncertainty 0,000 32 m and the probability distribution of the values of l .

0.5 Remark on logarithmic quantities and their units

The expression for the time dependence of a damped harmonic oscillation can be written either in real notation or as the real part of a complex notation

$$F(t) = A e^{-\delta t} \cos \omega t = \operatorname{Re} (A e^{(-\delta + i\omega)t}), \quad A = F(0)$$

This simple relation involving δ and ω can be obtained only when e (base of natural logarithms) is used as the base of the exponential function. The coherent SI unit for the damping coefficient δ and the angular frequency ω is second to the power minus one, symbol s^{-1} . Using the special names neper, symbol Np,

and radian, symbol rad, for the units of δt and ωt , respectively, the units for δ and ω become neper per second, symbol Np/s and radian per second, symbol rad/s, respectively.

Corresponding variation in space is treated in the same manner

$$F(x) = Ae^{-\alpha x} \cos \beta x = \operatorname{Re}(Ae^{-\gamma x}), \quad A = F(0) \quad \gamma = \alpha + i\beta$$

where the unit for α is neper per metre, symbol Np/m, and the unit for β is radian per metre, symbol rad/m.

The taking of logarithms of complex quantities is usefully done only with the natural logarithm. In ISO/IEC 80000, the level L_F of a field quantity F is therefore defined by convention as the natural logarithm of a ratio of the field quantity and a reference value F_0 , $L_F = \ln(F/F_0)$, in accordance with decisions by CIPM and OIML. Since a field quantity is defined as a quantity the square of which is proportional to power when it acts on a linear system, a factor 1/2 is introduced in the expression of the level of a power quantity, $L_P = (1/2) \ln(P/P_0)$, when defined by convention using the natural logarithm, in order to make the level of the power quantity equal to the level of the corresponding field quantity when the proportionality factors are the same for the considered quantities and the reference quantities, respectively. See IEC 60027-3:2002, subclause 4.2¹.

The neper and the bel, symbol B, are units for such logarithmic quantities. The neper is the coherent unit when the logarithmic quantities are defined by convention using the natural logarithm, 1 Np = 1. The bel is the unit when the numerical value of the logarithmic quantity is expressed in terms of decimal logarithms, 1 B = (1/2) ln 10 Np $\approx$ 1,151 293. The use of the neper is mostly restricted to theoretical calculations on field quantities, when this unit is most convenient, whereas in other cases, especially for power quantities, the bel, or in practice its submultiple decibel, symbol dB, is widely used. It should be emphasized that the fact that the neper is chosen as the coherent unit does not imply that the use of the bel should be avoided. The bel is accepted by the CIPM and the OIML for use with the SI. This situation is in some respect similar to the fact that the unit degree (...°) is commonly used in practice instead of the coherent SI unit radian (rad) for plane angle.

Generally it is not the logarithmic quantity itself (such as L_F or L_P) that is of interest; it is only the argument of the logarithm that is of interest.

To avoid ambiguities in practical applications of logarithmic quantities the unit should always be written out explicitly after the numerical value, even if the unit is neper, 1 Np = 1. Thus, for power quantities, the level is generally given by $L_P = 10 \lg(P/P_0)$ dB, and it is the numerical value $10 \lg(P/P_0)$ and the argument P/P_0 that are of interest. This numerical value is, however, not the same as the quantity L_P , because the unit decibel (or the unit bel) is not equal to one, 1. The corresponding applies to field quantities where the level is generally given by $L_F = 10 \lg(F/F_0)^2$ dB.

EXAMPLES

The implication of the statement that $L_F = 3$ dB (= 0,3 B) for the level of a field quantity is to be read as meaning: $\lg(F/F_0)^2 = 0,3$, or $(F/F_0)^2 = 10^{0,3}$. It also implies that $L_F \approx 0,3 \times 1,151\,293 = 0,345\,387\,9$ Np, but this is not often used in practice.

Similarly the implication of the statement that $L_P = 3$ dB (= 0,3 B) for the level of a power quantity is to be read as meaning: $\lg(P/P_0) = 0,3$, or $(P/P_0) = 10^{0,3}$. It also implies that $L_P \approx 0,3 \times 1,151\,293 = 0,345\,387\,9$, but this is not often used in practice.

Meaningful measures of power quantities generally require time averaging to form a mean-square value that is proportional to power. Corresponding field quantities may then be obtained as the root-mean-square value. Peak values during specified time intervals are also important. For such applications, the decimal (base 10) logarithm is generally used to form the level of field or power quantities. However, the natural logarithm could also be used for these applications, especially when the quantities are complex.

¹ IEC 60027-3, Letter symbols to be used in electrical technology — Part 3: Logarithmic and related quantities, and their units.

0.6 Introduction specific to 80000-14

0.6.1 The basis for the determination of the quantities and units to be addressed is the taxonomy specified in the Telebiometric Multimodal Model (TMM, see ITU-T Rec. X.1081). In the TMM ten aspects of the interaction between the human body and its environment are recognised (base modalities). These interactions are assumed to occur at various scales of propinquity and at various intensities across the "personal privacy sphere" (see Figure 1 of ITU-T Rec. X.1081).

0.6.2 Using the terminology of the TMM, these interactions (base modalities) are classified as follows (see the definition of terms in clause 3):

- TANGO–IN
- TANGO–OUT
- VIDEO–IN
- VIDEO–OUT
- AUDIO–IN
- AUDIO–OUT
- CHEMO–IN
- CHEMO–OUT
- RADIO–IN
- RADIO–OUT

0.6.3 It is also recognised that the temperature of (parts of) the human body is important both for safe operation of a telebiometric device and for its use in providing telebiometric security. This aspect of the interaction of a human body with its environment uses the base modalities TANGO–IN, TANGO–OUT, VIDEO–IN, and VIDEO–OUT, but is sufficiently important that it is defined in this part of ISO/IEC 80000 as an additional derived modality:

- CALOR–IN describes the absorption of heat by the whole human body mediated by electromagnetic radiation (including infra-red or micro-wave radiation), heat conduction (by direct contact) or heat convection (by a heat transporting liquid or gas).
- CALOR–OUT describes the loss of heat by the whole human body mediated by electromagnetic radiation, heat conduction, heat convection or evaporation.

0.6.4 Clauses 5 to 11 define quantities and units for the in and out aspects of one of the interactions of the human body with a telebiometric device – see [10].

0.6.5 The terminology used in this classification is derived as follows:

- TANGO: from Latin: tangō, -ēre, tetigī, tāctum Latin, meaning "I touch"

NOTE 1 TANGO–IN has been listed first, because in terms of the development of life, skin sensitivity came first, and other input organs were specialisations of that.

NOTE 2 There are two forms of skin, glabrous and hairy (see Figures 1 and 2). These have different properties for sensitivity (see VIM, 4-12), giving rise to different TANGO–IN units.

- VIDEO: from Latin: videō, -ēre, vīdī, vīsum Latin, meaning "I see"
- AUDIO: from Latin: audiō, -īre, -īvī (īī), -ītum Latin, meaning "I hear"
- CHEMO: from Medieval Latin: chemia, from Arabic al-kimia meaning "chemistry"
- RADIO: from Latin: radiō, -āre, -āvi, ātum Latin, meaning "I radiate"
and: Latin: radius, -iī (m) Latin, meaning "ray, beam"
- CALOR: from Latin: calor, calōris (m) Latin, meaning "warmth, heat"

0.6.6 In Annex C (normative) a code is specified that can be applied to classify a telebiometric device, and a compact graphical symbol that can be used to represent that code. This is based essentially on whether the device is an actuator or a sensor, and on which modalities it uses.

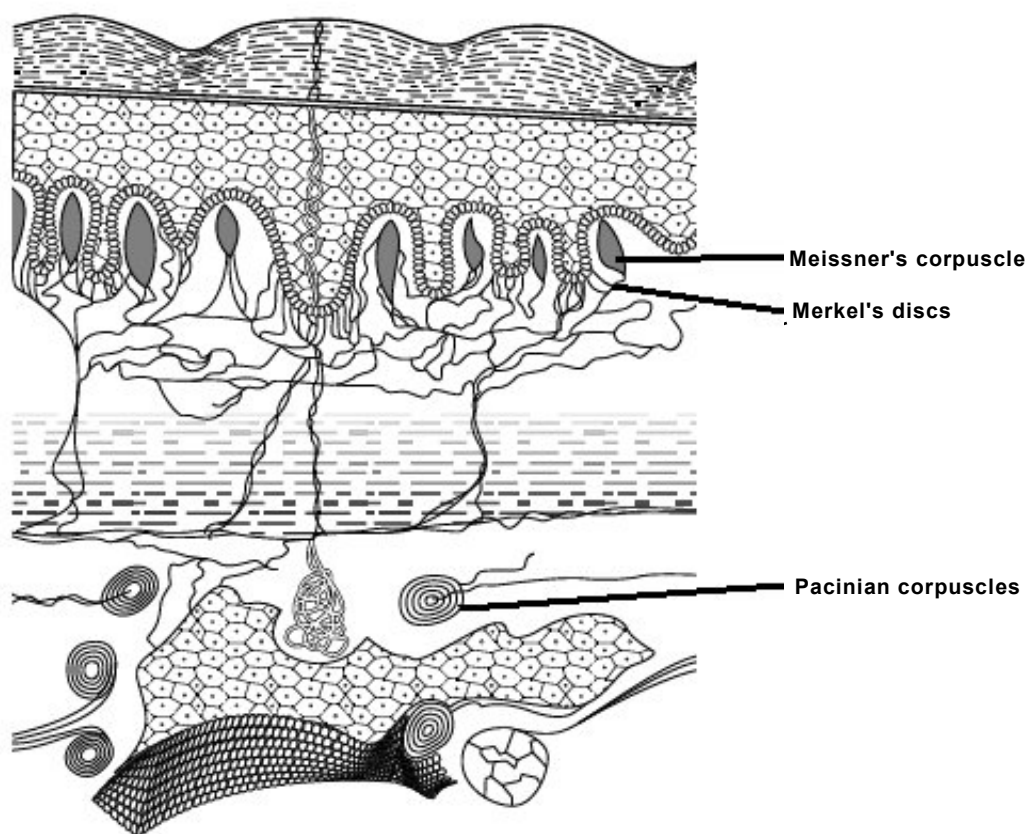


Figure 1 – Schematic drawing of a cross-section of glabrous skin

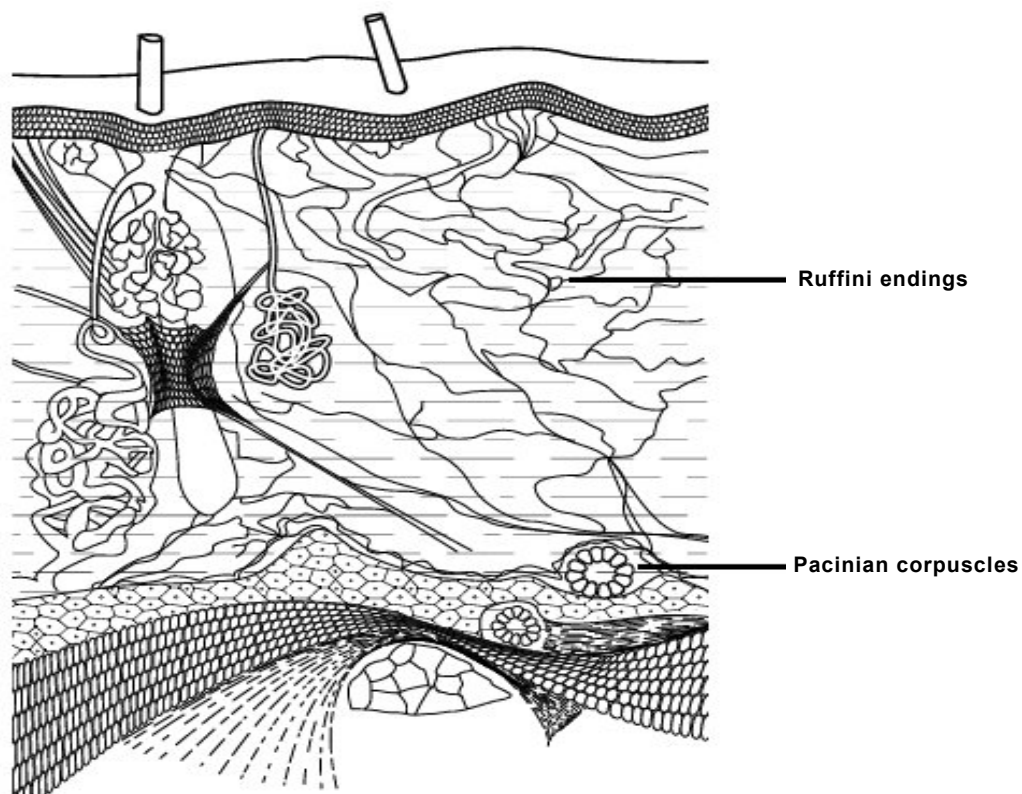


Figure 2 – Schematic drawing of a cross-section of hairy skin

This page is intentionally blank in order to ensure that the tables of Quantities appear on an even numbered page and the tables of units on an odd numbered page.

QUANTITIES AND UNITS –

Part 14: Telebiometrics related to human physiology

1 Scope

In this part of ISO/IEC 80000 names, symbols, and definitions for quantities and units of telebiometrics related to human physiology are given.

This part of ISO/IEC 80000 encompasses quantities and units for physiological, biological or behavioural characteristics that might provide input or output to telebiometric identification or verification systems (recognition systems), including any known detection or safety thresholds.

It also includes quantities and units concerned with effects on a human being caused by the use of a telebiometric device.

NOTE The quantities and units, their names and letter symbols, specified here are those widely used in the disciplines and specialities related to telebiometrics: the telebiometric industry and telebiometry. Telebiometric units are SI units (see ISO 80000-1).

A code and an associated graphical symbol for the identification of the type of a telebiometric device are also specified in this part of ISO/IEC 80000.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 80000-1, *Quantities and units — Part 1: General*²

ISO 80000-3:2006, *Quantities and units — Part 3: Space and time*

ISO 80000-4:2006, *Quantities and units — Part 4: Mechanics*

ISO 80000-5, *Quantities and units — Part 5: Thermodynamics*

IEC 80000-6, *Quantities and units — Part 6: Electromagnetism*²

ISO 80000-7, *Quantities and units — Part 7: Light*²

ISO 80000-8, *Quantities and units — Part 8: Acoustics*

ISO 80000-9, *Quantities and units — Part 9: Physical chemistry and molecular physics*²

ISO 80000-10, *Quantities and units — Part 10: Atomic and nuclear physics*

ITU-T Rec. X.1081, *The Telebiometric Multimodal Model — A Framework for the Specification of Security and Safety Aspects of Telebiometrics*

VIM (2007), *International Vocabulary of Metrology — Basic and General Concepts and Associated Terms* – 3rd edition

²⁾ In preparation.