52018-1
Annex A

Table A.1 — References

Reference	Reference document	
	Number	Title
M1-4	ISO 52003-1	*Energy performance of buildings — Indicators, requirements, ratings and certificates — Part 1: General aspects and application to the overall energy performance*
M1-6	ISO 17772-1	*Energy performance of buildings — Indoor environmental quality — Part 1: Indoor environmental input parameters for the design and assessment of energy performance of buildings*
	EN 16798-1 (under preparation)	*Energy performance of buildings - Ventilation of buildings - Part 1: Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics* (Module M1-6)
M1-13	ISO 52010-1	*Energy performance of buildings — External climatic conditions — Part 1: Conversion of climatic data for energy calculations*
M2-2	ISO 52016-1	*Energy performance of buildings — Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads — Part 1: Calculation procedures*
M2-5.1	ISO 13789	*Thermal performance of buildings — Transmission and ventilation heat transfer coefficients — Calculation method*
M2-5.2	ISO 10211	*Thermal bridges in building construction — Heat flows and surface temperatures — Detailed calculations*

Reference	Reference document	
	Number	Title
M2-5.3	ISO 14683	*Thermal bridges in building construction — Linear thermal transmittance — Simplified methods and default values*
M2-8.1	ISO 52022-1	*Energy performance of buildings — Thermal, solar and daylight properties of building components and elements — Part 1: Simplified calculation method of the solar and daylight characteristics for solar protection devices combined with glazing*
M2-8.2	ISO 52022-3	*Energy performance of buildings — Thermal, solar and daylight properties of building components and elements — Part 3: Detailed calculation method of the solar and daylight characteristics for solar protection devices combined with glazing*
M5-8	EN 16798-5-1 EN	*Energy performance of buildings — Modules M5-6, M5-8, M6-5, M6-8, M7-5, M7-8 — Ventilation for buildings — Calculation methods for energy requirements of ventilation and air conditioning systems — Part 5-1: Distribution and generation (revision of EN 15241) — Method 1* *Energy performance of buildings — Modules M5-6.2, M5-8.2 — Ventilation for buildings — Calculation methods for energy requirements of ventilation systems — Part 5-2: Distribution and generation — Method 2*
M9-1	EN 15193-1	*Energy performance of buildings — Module M9 — Energy requirements for lighting — Part 1: Specifications*

Table A.2a — Choices with respect to the partial EPB requirements related to thermal energy balance and fabric features

Application: new buildings			
Partial energy performance feature	Requirement?	Exceptions*?	Details in
Summer thermal comfort	X	X (1)(2)	Table A.3
Winter thermal comfort			
Energy "need" for heating: give further specifications (a)*			
Energy "need" for cooling: give further specifications (b)*			
Combined energy "need" for heating and cooling (and possibly still other quantities): define precisely*			
Overall thermal insulation of the envelope			
Thermal insulation of individual elements of the thermal envelope	X	X (2)	Table A.9
Thermal bridges			
Window energy performance			
Airtightness of the thermal envelope: mandatory measurement: give further specifications*			
Airtightness of the thermal envelope: quantitative requirement: give further specifications*			
Solar control			
Specific heat loss coefficient - Other requirement 1; define*)	X (3)	X (2)	Table A.14

1) **Buildings where the average internal gains during opening period exceed > 10 W/m2 are exempt from the summer comfort requirement. In buildings with very high internal gains, it would be difficult to reach the requirements without mechanical cooling as conventional measures are not effective against internal gains.**

2) **The following building types are exempt from all requirements:**
   - **individual buildings with a conditioned floor area under 50 m2**
   - **homes and holiday homes with a use of less than 4 months per year**
   - **temporary buildings with a time of use of two years or less**
   - **buildings for religious activities**
   - **non-residential agricultural buildings with low energy demand, where the temperature does not exceed 12 C or the heating period is less than 4 months and the cooling period is less than 2 months**
   - **workshops and industrial sites where internal gains exceed 20 W/m2 during operation or the air change rate is more than 20 1/h**

3) **Specific heat loss coefficient (W/m3K): calculated as the overall transmission heat loss of the building (including thermal bridge loss) minus the utilised passive solar gains divided by the heating degree-hours.**

Table A.2a (continued)— Choices with respect to the partial EPB requirements related to thermal energy balance and fabric features

Application: new buildings
Motivation: — Hungary has a heating dominated climate, but summers are also very warm. Active space cooling is not standard in residential buildings, but it is standard in office buildings. Therefore, a requirement on summer thermal comfort is introduced. All buildings must comply with the summer thermal comfort requirement to ensure a good summer design even in buildings with an active cooling system. — The requirement on the thermal insulation of all individual elements of the thermal envelope ensures, first of all, that sufficiently high internal surface temperatures are achieved under winter conditions. Further, it guarantees that the thermal envelope, executed immediately at the time of the initial construction, conforms to the full technical requirements and is, economically speaking, state-of-the-art. (The thermal envelope is, generally speaking, practically and economically difficult to upgrade later on and it thus largely predestines the energy performance of the building over its entire lifetime.) — The requirement on the specific heat loss coefficient ensures that buildings have a good architectural design, where building shape, as well as window area and orientation are designed to minimise heat losses and maximise passive solar gains in the winter. This indicator includes only building-related terms (heat losses and solar gains), and does not consider any user-related terms (air change rates and internal gains).

Table A.2b — Choices with respect to the partial EPB requirements related to thermal energy balance and fabric features

Application: major renovation of existing buildings			
Partial energy performance feature	Requirement?	Exceptions*?	Details in
Summer thermal comfort	X	X (1)(2)	Table A.3
Winter thermal comfort			
Energy "need" for heating: give further specifications (a)*			
Energy "need" for cooling: give further specifications (b)*			
Combined energy "need" for heating and cooling (and possibly still other quantities): define precisely*			
Overall thermal insulation of the envelope			
Thermal insulation of individual elements of the thermal envelope	X	X (2)	Table A.9
Thermal bridges			
Window energy performance			
Airtightness of the thermal envelope: mandatory measurement: give further specifications*			
Airtightness of the thermal envelope: quantitative requirement: give further specifications*			
Solar control			
Specific heat loss coefficient - Other requirement 1; define*)	X (3)	X (2)	Table A.14

1) **Buildings where the average internal gains during opening period exceed > 10 W/m2 are exempt from the summer comfort requirement. In buildings with very high internal gains, it would be difficult to reach the requirements without mechanical cooling as conventional measures are not effective against internal gains.**

2) **The following building types are exempt from all requirements:**

- **historical buildings under heritage protection, as the traditional appearance of such buildings cannot always be combined with energy efficiency techniques. Historical or artistic value should be preserved.**
- **individual buildings with a conditioned floor area under 50 m2**
- **homes and holiday homes with a use of less than 4 months per year**
- **temporary buildings with a time of use of two years or less**
- **buildings for religious activities**
- **non-residential agricultural buildings with low energy demand, where the temperature does not exceed 12 C or the heating period is less than 4 months and the cooling period is less than 2 months**
- **workshops and industrial sites where internal gains exceed 20 W/m2 during operation or the air change rate is more than 20 1/h**

3) **Specific heat loss coefficient (W/m3K): calculated as the overall transmission heat loss of the building (including thermal bridge loss) minus the utilised passive solar gains divided by the heating degree-hours.**

Motivation: In case of major renovations (involving more than 25% of the building envelope), requirements are the same as for new buildings as a complex renovation should be targeted.

Table A.2c — Choices with respect to the partial EPB requirements related to thermal energy balance and fabric features

Application: minor renovation of existing buildings			
Partial energy performance feature	Requirement?	Exceptions*?	Details in
Summer thermal comfort			
Winter thermal comfort			
Energy "need" for heating: give further specifications (a)*			
Energy "need" for cooling: give further specifications (b)*			
Combined energy "need" for heating and cooling (and possibly still other quantities): define precisely*			
Overall thermal insulation of the envelope			
Thermal insulation of individual elements of the thermal envelope	X	X(1)	Table A.9
Thermal bridges			
Window energy performance			
Airtightness of the thermal envelope: mandatory measurement: give further specifications*			
Airtightness of the thermal envelope: quantitative requirement: give further specifications*			
Solar control			
<free text> Other requirement 1; define*)			

1) The following building types are exempt from all requirements:

- **historical buildings under heritage protection, as the traditional appearance of such buildings cannot always be combined with energy efficiency techniques. Historical or artistic value should be preserved.**
- **individual buildings with a conditioned floor area under 50 m2**
- **homes and holiday homes with a use of less than 4 months per year**
- **temporary buildings with a time of use of two years or less**
- **buildings for religious activities**
- **non-residential agricultural buildings with low energy demand, where the temperature does not exceed 12 C or the heating period is less than 4 months and the cooling period is less than 2 months**
- **workshops and industrial sites where internal gains exceed 20 W/m2 during operation or the air change rate is more than 20 1/h**

Motivation: For reasons of practicality in the context of minor renovations (less than 25% of the building envelope), requirements are only set on element level and not on combinations of elements (which may involve existing elements)

Table A.3 — Numeric indicator used for the requirement on the summer thermal comfort

Application: New buildings	
Numeric indicator	Choice
Time above a fixed reference temperate [h]	
Temperature weighted time above a fixed reference temperature [K-h]	**x**
Other indicator;	
Fixed reference temperature of 26 °C	

Table A.9. Opaque boundary

Application: new buildings	
Numeric indicator	Choice
Minimum temperature factor fR_{si} [-]	
Thermal transmittance *U* [W/(m²-K)]	X
Total thermal resistance R_{tot} [m²K/W]	
Intrinsic element thermal resistance $R_{c,op}$ [m²K/W]	
Other indicator;	
U value W/m²K relates to one dimensional heat flow plus thermal bridge effect of constructional elements repeating within an opaque element (wall or floor slab) excluding the thermal bridges at the joint of two elements (wall and roof, wall and window)	

Table A.14 — Numeric indicator used for other requirements (see Table A.2)

Application: ...	
EPB feature	Numeric indicator
Specific heat loss coefficient - Other requirement 1;	X
* All EPB features and their corresponding indicator shall be clearly described and precise reference shall be made to their definition and their assessment method. The numbers (1), (2), ... refer to the numbers of other requirements in Table A.2/B.2.	
Specification: Other requirement 1: Specific heat loss coefficient in W/m^3K calculated as the overall transmission heat loss of the building (including thermal bridge loss) minus the utilised passive solar gains divided by the heating degree-hours.	