

# ISO 52016-3:2023-09 (E)

## Energy performance of buildings - Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads - Part 3: Calculation procedures regarding adaptive building envelope elements

---

<b>Contents</b>		<b>Page</b>
<b>Foreword</b> .....		<b>v</b>
<b>Introduction</b> .....		<b>vi</b>
<b>1 Scope</b> .....		<b>1</b>
<b>2 Normative references</b> .....		<b>1</b>
<b>3 Terms and definitions</b> .....		<b>2</b>
<b>4 Symbols, subscripts and abbreviated terms</b> .....		<b>4</b>
4.1 Symbols.....		4
4.2 Subscripts.....		5
4.3 Abbreviated terms.....		7
<b>5 Description of the method</b> .....		<b>7</b>
5.1 Output of the method.....		7
5.2 General description of the method.....		7
<b>6 Calculation method</b> .....		<b>9</b>
6.1 Output data.....		9
6.2 Calculation time intervals.....		10
6.3 Input data.....		10
6.3.1 General.....		10
6.3.2 Input data of a simplified adaptive building envelope element.....		11
6.3.3 Input data of a detailed adaptive building envelope element.....		11
6.3.4 Control related input data.....		13
6.3.5 Climatic input data.....		15
6.3.6 Constants and physical data.....		15
6.3.7 Input data from <a href="#">Annex A</a> and <a href="#">Annex B</a> .....		15
6.4 Properties of the adaptive building envelope element.....		15
6.4.1 General.....		15
6.4.2 Simplified or detailed adaptive building envelope element.....		16
6.4.3 Properties of a simplified adaptive building envelope element.....		17
6.4.4 Model and properties of a detailed adaptive building envelope element.....		24
6.5 Connection of the model of the adaptive building envelope element to the model of the thermal zone of ISO 52016-1.....		25
6.5.1 Simplified adaptive building envelope element.....		25
6.5.2 Detailed adaptive building envelope element.....		25
6.6 Selection of control type.....		25
6.7 Modelling of the control of the environmentally activated adaptive building envelope element.....		26
6.8 Modelling of the control scenario for the actively controlled adaptive building envelope element.....		27
6.8.1 General.....		27
6.8.2 Selection of conditions and events.....		27
6.8.3 Selection of sensors.....		29
6.8.4 Selection of methods to identify the conditions or events.....		29
6.8.5 Basic rules for the reference control scenario.....		36
6.8.6 Modelling of the user behaviour.....		38
6.8.7 Reference control scenarios.....		39
6.9 Hourly calculation procedures.....		42
6.10 Post-processing: performance characteristics.....		42

<b>7</b>	<b>Quality control</b> .....	<b>43</b>
<b>8</b>	<b>Conformance check</b> .....	<b>43</b>
<b>Annex A (normative)</b>	<b>Input and method selection data sheet — Template</b> .....	<b>45</b>
<b>Annex B (informative)</b>	<b>Input and method selection data sheet — Default choices</b> .....	<b>46</b>
<b>Annex C (normative)</b>	<b>Reference control scenarios for adaptive building envelope elements with active solar shading or chromogenic glazing</b> .....	<b>48</b>
	<b>Bibliography</b> .....	<b>54</b>