

# ISO 9869-3:2023-11 (E)

## Thermal insulation of building elements - In-situ measurement of thermal resistance and thermal transmittance - Part 3: Probe insertion method

---

<b>Contents</b>		<b>Page</b>
Foreword.....		iv
Introduction.....		v
<b>1</b> Scope.....		<b>1</b>
<b>2</b> Normative references.....		<b>1</b>
<b>3</b> Terms and definitions.....		<b>1</b>
<b>4</b> Symbols and units.....		<b>2</b>
<b>5</b> Principle.....		<b>2</b>
5.1 General.....		2
5.2 Method without heat flow measurement.....		2
5.3 Method with heat flow measurement.....		2
<b>6</b> Apparatus.....		<b>3</b>
6.1 Temperature measuring devices.....		3
6.1.1 Type of sensors and accuracy.....		3
6.1.2 Sensor for measuring temperature distribution in walls.....		3
6.1.3 Sensors for measuring surface and air temperatures.....		4
6.2 Borescope.....		4
6.3 Heat flow meter (HFM).....		5
<b>7</b> Locations of the measured area and sensor installation.....		<b>5</b>
<b>8</b> Measurement conditions and period.....		<b>7</b>
8.1 General.....		7
8.2 Method without heat flow measurement.....		7
8.3 Method with heat flow measurement.....		7
<b>9</b> Measurement procedure.....		<b>7</b>
9.1 General.....		7
9.2 Method without heat flow measurement.....		7
9.3 Method with heat flow measurement.....		8
<b>10</b> Calculations.....		<b>9</b>
10.1 Thickness of wall components.....		9
10.2 Temperature distribution.....		9
10.3 Thermal resistance.....		9
<b>11</b> Test report.....		<b>10</b>
<b>Annex A</b> (normative) <b>Evaluation of the effect of thermal bridges on the sensor for measuring the temperature distribution in the wall</b> .....		<b>12</b>
<b>Annex B</b> (informative) <b>Uncertainty analysis</b> .....		<b>18</b>
<b>Bibliography</b> .....		<b>21</b>