

# DIN EN 54-5:2017-05 (E)

## Fire detection and fire alarm systems - Part 5: Heat detectors - Point heat detectors

---

<b>Contents</b>		<b>Page</b>
European foreword .....		5
<b>1</b>	<b>Scope .....</b>	<b>7</b>
<b>2</b>	<b>Normative references .....</b>	<b>7</b>
<b>3</b>	<b>Terms, definitions and abbreviations .....</b>	<b>8</b>
<b>3.1</b>	<b>Terms and Definitions .....</b>	<b>8</b>
<b>3.2</b>	<b>Abbreviations .....</b>	<b>8</b>
<b>4</b>	<b>Product characteristics .....</b>	<b>8</b>
<b>4.1</b>	<b>General .....</b>	<b>8</b>
<b>4.1.1</b>	<b>Heat Response Categories .....</b>	<b>8</b>
<b>Table 1 -- Detector categorization temperatures .....</b>		<b>9</b>
<b>4.2</b>	<b>Operational reliability .....</b>	<b>9</b>
<b>4.2.1</b>	<b>Position of heat sensitive elements .....</b>	<b>9</b>
<b>4.2.2</b>	<b>Individual alarm indication .....</b>	<b>9</b>
<b>4.2.3</b>	<b>Connection of ancillary devices .....</b>	<b>10</b>
<b>4.2.4</b>	<b>Monitoring of detachable detectors .....</b>	<b>10</b>
<b>4.2.5</b>	<b>Manufacturer's adjustments .....</b>	<b>10</b>
<b>4.2.6</b>	<b>On-site adjustment of response behaviour .....</b>	<b>10</b>
<b>4.2.7</b>	<b>Software controlled detector (when provided) .....</b>	<b>10</b>
<b>4.3</b>	<b>Nominal activation conditions/sensitivity .....</b>	<b>12</b>
<b>4.3.1</b>	<b>Directional dependence .....</b>	<b>12</b>
<b>4.3.2</b>	<b>Static response temperature .....</b>	<b>12</b>
<b>4.3.3</b>	<b>Response times from typical application temperature .....</b>	<b>12</b>
<b>4.3.4</b>	<b>Response times from 25 °C .....</b>	<b>12</b>
<b>4.3.5</b>	<b>Response times from high ambient temperature .....</b>	<b>12</b>
<b>4.3.6</b>	<b>Reproducibility .....</b>	<b>12</b>
<b>4.4</b>	<b>Response delay (response time) .....</b>	<b>13</b>
<b>4.4.1</b>	<b>Additional tests for suffix S detectors .....</b>	<b>13</b>
<b>4.4.2</b>	<b>Additional tests for suffix R detectors .....</b>	<b>13</b>
<b>4.5</b>	<b>Tolerance to supply voltage - Variation in supply parameters .....</b>	<b>13</b>
<b>4.6</b>	<b>Durability of Nominal activation conditions/sensitivity .....</b>	<b>13</b>
<b>4.6.1</b>	<b>Temperature resistance .....</b>	<b>13</b>
<b>4.6.2</b>	<b>Humidity resistance .....</b>	<b>13</b>
<b>4.6.3</b>	<b>Corrosion resistance: Sulphur dioxide (SO<sub>2</sub>) corrosion (endurance) .....</b>	<b>14</b>
<b>4.6.4</b>	<b>Vibration resistance .....</b>	<b>14</b>
<b>4.6.5</b>	<b>Electrical stability: Electromagnetic Compatibility (EMC), Immunity tests (operational) ....</b>	<b>14</b>
<b>5</b>	<b>Testing, assessment and sampling methods .....</b>	<b>14</b>
<b>5.1</b>	<b>General .....</b>	<b>14</b>
<b>5.1.1</b>	<b>Atmospheric conditions for tests .....</b>	<b>14</b>
<b>5.1.2</b>	<b>Operating conditions for tests .....</b>	<b>15</b>
<b>5.1.3</b>	<b>Mounting arrangements .....</b>	<b>15</b>
<b>5.1.4</b>	<b>Tolerances .....</b>	<b>15</b>
<b>5.1.5</b>	<b>Measurement of response time .....</b>	<b>15</b>
<b>5.1.6</b>	<b>Provision for tests .....</b>	<b>16</b>
<b>5.1.7</b>	<b>Test schedule .....</b>	<b>16</b>
<b>Table 2 -- Test schedule for resettable point heat detectors .....</b>		<b>17</b>

Table 3 -- Test schedule for non-resettable point heat detectors .....	18
5.2 Operational reliability .....	20
5.2.1 Position of heat sensitive elements .....	20
5.2.2 Individual alarm indication .....	20
5.2.3 Connection of ancillary devices .....	20
5.2.4 Monitoring of detachable detectors .....	20
5.2.5 Manufacturer's adjustments .....	20
5.2.6 On-site adjustment of response behaviour .....	20
5.2.7 Software controlled detectors (when provided) .....	20
5.3 Nominal activation conditions/sensitivity .....	21
5.3.1 Directional dependence .....	21
5.3.2 Static response temperature .....	21
5.3.3 Response times from typical application temperature .....	22
Table 4 -- Response time limits .....	22
5.3.4 Response times from 25 °C .....	22
5.3.5 Response times from high ambient temperature .....	23
Table 5 -- Response time limits from maximum application temperature .....	24
5.3.6 Reproducibility .....	24
5.4 Response delay (response time) .....	24
5.4.1 Additional tests for suffix S detectors .....	24
Table 6 -- Conditioning and airflow temperatures .....	25
Table 7 -- Lower limit of response for category suffix S point heat detectors .....	25
5.4.2 Additional test for suffix R detectors .....	26
Table 8 -- Initial conditioning temperature for suffix R point heat detectors .....	26
5.5 Tolerance to supply voltage .....	26
5.5.1 Variation in supply parameters .....	26
5.6 Durability of Nominal activation conditions/sensitivity .....	27
5.6.1 Temperature resistance .....	27
Table 9 -- Dry heat (endurance) conditioning temperatures .....	29
5.6.2 Humidity resistance .....	29
5.6.3 Corrosion resistance .....	31
5.6.4 Vibration resistance .....	33
5.6.5 Electrical stability .....	37
6 Assessment and verification of constancy of performance (AVCP) .....	38
6.1 General .....	38
6.2 Type testing .....	39
6.2.1 General .....	39
6.2.2 Test samples, testing and compliance criteria .....	39
Table 10 -- Number of samples to be tested and compliance criteria .....	40
6.2.3 Test reports .....	40
6.3 Factory production control (FPC) .....	40
6.3.1 General .....	40
6.3.2 Requirements .....	41
6.3.3 Product specific requirements .....	43
6.3.4 Initial inspection of factory and FPC .....	44
6.3.5 Continuous surveillance of FPC .....	44
6.3.6 Procedure for modifications .....	44
6.3.7 One-off products, pre-production products, (e.g. prototypes) and products produced in very low quantities .....	45
7 Classification .....	45
8 Marking, labelling and packaging .....	45

<b>Annex A (normative) Heat tunnel for response time and response temperature measurements</b> .....	<b>47</b>
<b>Annex B (informative) Information concerning the construction of the heat tunnel</b> .....	<b>48</b>
<b>Figure B.1 -- Example of working section of heat tunnel</b> .....	<b>49</b>
<b>Figure B.2 -- Example of mounting arrangement for simultaneously testing two point heat detectors (section A - A, see Figure B.1)</b> .....	<b>50</b>
<b>Annex C (informative) Derivation of upper and lower limits of response times</b> .....	<b>51</b>
<b>Table C.1 -- Thermal constants used to derive upper limits in Table 4</b> .....	<b>52</b>
<b>Annex D (informative) Apparatus for impact test</b> .....	<b>54</b>
<b>Figure D.1 -- Impact apparatus</b> .....	<b>55</b>
<b>Annex E (informative) Data supplied with point heat detectors</b> .....	<b>56</b>
<b>Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Regulation</b> .....	<b>57</b>
<b>ZA.1 Scope and relevant characteristics</b> .....	<b>57</b>
<b>Table ZA.1 -- Relevant clauses for point heat detectors and intended use in fire detection and fire alarm systems installed in and around buildings</b> .....	<b>57</b>
<b>ZA.2 Procedure for assessment and verification of constancy of performance (AVCP) of point heat detector</b> .....	<b>59</b>
<b>ZA.2.1 System of AVCP</b> .....	<b>59</b>
<b>Table ZA.2 -- System of AVCP</b> .....	<b>59</b>
<b>Table ZA.3 -- Assignment of evaluation of conformity tasks for point heat detectors under system 1</b> .....	<b>60</b>
<b>ZA.2.2 Declaration of performance (DoP)</b> .....	<b>60</b>
<b>ZA.2.2.1 General</b> .....	<b>60</b>
<b>ZA.2.2.2 Content</b> .....	<b>61</b>
<b>ZA.2.2.3 Example of DoP</b> .....	<b>62</b>
<b>ZA.3 CE marking and labelling</b> .....	<b>68</b>
<b>Bibliography</b> .....	<b>72</b>