

# ISO 7240-32:2025-09 (E)

## Fire detection and alarm systems - Part 32: Non-resettable line-type heat detectors

| <b>Contents</b>     |  | <b>Page</b> |
|---------------------|--|-------------|
| <b>Foreword</b>     |  | <b>vii</b>  |
| <b>Introduction</b> |  | <b>viii</b> |
| <b>1</b>            | <b>Scope</b>   | <b>1</b>    |
| <b>2</b>            | <b>Normative references</b>  | <b>1</b>    |
| <b>3</b>            | <b>Terms and definitions and abbreviations</b>                                   | <b>1</b>    |
| 3.1                 | Terms and definitions  | 2           |
| 3.2                 | Abbreviations  | 2           |
| <b>4</b>            | <b>Requirements</b>  | <b>3</b>    |
| 4.1                 | General  | 3           |
| 4.1.1               | Conformance  | 3           |
| 4.1.2               | NLTHD performance type   | 3           |
| 4.1.3               | Heat response for Class A application  | 3           |
| 4.1.4               | Environmental groups   | 3           |
| 4.2                 | Individual alarm indication  | 4           |
| 4.3                 | Signalling   | 4           |
| 4.4                 | Maximum ambient temperature  | 4           |
| 4.5                 | Connection of ancillary devices  | 4           |
| 4.6                 | Manufacturer's adjustments   | 4           |
| 4.7                 | Software   | 4           |
| 4.7.1               | General  | 4           |
| 4.7.2               | Software design  | 5           |
| 4.7.3               | The storage of programs and data   | 5           |
| 4.8                 | Sensing element fault  | 5           |
| 4.9                 | On-site adjustment of response behaviour   | 5           |
| 4.10                | Variation in supply parameters   | 5           |
| 4.11                | Low voltage fault  | 5           |
| 4.12                | Performance parameters under fire condition                                      | 6           |
| 4.13                | Fire sensitivity for Class A application   | 6           |
| 4.14                | Static response temperature test for Class A application                         | 6           |
| 4.15                | Dry heat (operational) for sensor control unit                                   | 6           |
| 4.16                | Cold (operational) for sensing element   | 6           |
| 4.17                | Cold (operational) for sensor control unit                                       | 6           |
| 4.18                | Damp heat, steady-state (endurance) for sensor control unit and sensing element  | 6           |
| 4.19                | Damp heat, cyclic (operational) for sensing element                              | 6           |
| 4.20                | Damp heat, cyclic (operational) for sensor control unit                          | 6           |
| 4.21                | Damp heat, steady-state (operational) for sensor control unit                    | 6           |
| 4.22                | Damp heat, cyclic (endurance) for sensor control unit and sensing element        | 6           |
| 4.23                | Shock (operational) for sensor control unit                                      | 6           |
| 4.24                | Impact (operational) for sensor control unit                                     | 7           |
| 4.25                | Impact (operational) for sensing element   | 7           |
| 4.26                | Vibration, sinusoidal (operational) for sensor control unit                      | 7           |
| 4.27                | Vibration, sinusoidal (operational) for sensing element                          | 7           |
| 4.28                | Vibration, sinusoidal (endurance) for sensor control unit                        | 7           |
| 4.29                | Vibration, sinusoidal (endurance) for sensing element                            | 7           |
| 4.30                | Sulphur dioxide (SO <sub>2</sub> ) corrosion (endurance) for sensing element     | 7           |
| 4.31                | Sulphur dioxide (SO <sub>2</sub> ) corrosion (endurance) for sensor control unit | 7           |
| 4.32                | Electromagnetic compatibility (EMC), immunity (operational)                      | 7           |

|          |   |          |
|----------|---|----------|
| <b>5</b> | <b>Test methods</b>   | <b>7</b> |
| 5.1      | General   | 7        |
| 5.1.1    | Atmospheric conditions for tests  | 7        |
| 5.1.2    | Operating conditions for tests  | 8        |
| 5.1.3    | Mounting arrangements   | 8        |
| 5.1.4    | Tolerances  | 8        |
| 5.1.5    | Procedure for measurement of response temperature                               | 8        |
| 5.1.6    | Provision for tests   | 9        |
| 5.1.7    | Test schedule   | 9        |
| 5.2      | Individual alarm indication   | 11       |
| 5.3      | Signalling  | 11       |
| 5.4      | Maximum ambient temperature test (endurance) for sensing element                | 11       |
| 5.4.1    | Objective of the test   | 11       |
| 5.4.2    | Mounting of the sensing element   | 11       |
| 5.4.3    | Test procedure  | 12       |
| 5.4.4    | Requirements  | 12       |
| 5.5      | Connection of ancillary devices   | 12       |
| 5.6      | Manufacturer's adjustments  | 12       |
| 5.7      | Requirements for software controlled detectors                                  | 13       |
| 5.8      | Sensing element fault   | 13       |
| 5.8.1    | Object of the test  | 13       |
| 5.8.2    | Test procedure  | 13       |
| 5.8.3    | Requirements  | 13       |
| 5.9      | On-site adjustment of response behaviour  | 13       |
| 5.10     | Variation in supply parameters  | 13       |
| 5.10.1   | Objective   | 13       |
| 5.10.2   | Test procedure  | 13       |
| 5.10.3   | Requirements  | 13       |
| 5.11     | Low voltage fault (sensor control unit with external power supply)              | 14       |
| 5.11.1   | Objective   | 14       |
| 5.11.2   | Test procedure  | 14       |
| 5.11.3   | Requirements  | 14       |
| 5.12     | Performance parameters under fire condition                                     | 14       |
| 5.12.1   | Objective   | 14       |
| 5.12.2   | Test procedure  | 14       |
| 5.12.3   | Requirements  | 14       |
| 5.13     | Fire sensitivity for Class A application (optional function)                    | 14       |
| 5.13.1   | Objective   | 14       |
| 5.13.2   | Principle   | 14       |
| 5.13.3   | Fire test room  | 14       |
| 5.13.4   | Test fires for Class A application  | 15       |
| 5.13.5   | Mounting of the specimens   | 15       |
| 5.13.6   | Initial conditions  | 15       |
| 5.13.7   | Recording of the fire parameters and response times                             | 16       |
| 5.13.8   | Requirements  | 16       |
| 5.14     | Static response temperature test for Class A application (optional function)    | 16       |
| 5.14.1   | Object  | 16       |
| 5.14.2   | Test procedure for NLTHD  | 16       |
| 5.14.3   | Requirements  | 17       |
| 5.15     | Dry heat (operational) for sensor control unit                                  | 17       |
| 5.15.1   | Objective   | 17       |
| 5.15.2   | Test procedure  | 17       |
| 5.15.3   | Requirements  | 18       |
| 5.16     | Cold (operational) for sensing element  | 18       |
| 5.16.1   | Objective   | 18       |
| 5.16.2   | Test procedure  | 18       |
| 5.16.3   | Requirements  | 19       |
| 5.17     | Cold (operational) for sensor control unit                                      | 19       |
| 5.17.1   | Objective   | 19       |
| 5.17.2   | Test procedure  | 19       |
| 5.17.3   | Requirements  | 20       |
| 5.18     | Damp heat, steady-state (endurance) for sensor control unit and sensing element | 20       |
| 5.18.1   | Objective   | 20       |
| 5.18.2   | Test procedure  | 20       |
| 5.18.3   | Requirements  | 21       |

|          |   |           |
|----------|---|-----------|
| 5.19     | Damp heat, cyclic (operational) for sensing element                             | 21        |
| 5.19.1   | Objective of the test   | 21        |
| 5.19.2   | Test procedure  | 21        |
| 5.19.3   | Requirements  | 22        |
| 5.20     | Damp heat, cyclic (operational) for sensor control unit                         | 22        |
| 5.20.1   | Objective of the test   | 22        |
| 5.20.2   | Test procedure  | 22        |
| 5.20.3   | Requirements  | 23        |
| 5.21     | Damp heat, steady-state (operational) for sensor control unit                   | 24        |
| 5.21.1   | Objective of the test   | 24        |
| 5.21.2   | Test procedure  | 24        |
| 5.21.3   | Requirements  | 24        |
| 5.22     | Damp heat, cyclic (endurance) for sensor control unit and sensing element       | 25        |
| 5.22.1   | Objective   | 25        |
| 5.22.2   | Test procedure  | 25        |
| 5.22.3   | Requirements  | 25        |
| 5.23     | Shock (operational) for sensor control unit                                     | 26        |
| 5.23.1   | Objective   | 26        |
| 5.23.2   | Test procedure  | 26        |
| 5.23.3   | Requirements  | 26        |
| 5.24     | Impact (operational) for sensor control unit                                    | 27        |
| 5.24.1   | Objective   | 27        |
| 5.24.2   | Test procedure  | 27        |
| 5.24.3   | Requirements  | 27        |
| 5.25     | Impact (operational) for sensing element  | 28        |
| 5.25.1   | Objective   | 28        |
| 5.25.2   | Test procedure  | 28        |
| 5.25.3   | Requirements  | 28        |
| 5.26     | Vibration, sinusoidal (operational) for sensor control unit                     | 29        |
| 5.26.1   | Objective   | 29        |
| 5.26.2   | Test procedure  | 29        |
| 5.26.3   | Requirements  | 29        |
| 5.27     | Vibration, sinusoidal (operational) for sensing element                         | 30        |
| 5.27.1   | Objective   | 30        |
| 5.27.2   | Test procedure  | 30        |
| 5.27.3   | Requirements  | 30        |
| 5.28     | Vibration, sinusoidal (endurance) for sensor control unit                       | 31        |
| 5.28.1   | Objective   | 31        |
| 5.28.2   | Test procedure  | 31        |
| 5.28.3   | Requirements  | 31        |
| 5.29     | Vibration, sinusoidal (endurance) for sensing element                           | 31        |
| 5.29.1   | Objective   | 31        |
| 5.29.2   | Test procedure  | 31        |
| 5.29.3   | Requirements  | 32        |
| 5.30     | Sulfur dioxide (SO <sub>2</sub> ) corrosion (endurance) for sensing element     | 32        |
| 5.30.1   | Objective   | 32        |
| 5.30.2   | Test procedure  | 32        |
| 5.30.3   | Requirements  | 33        |
| 5.31     | Sulfur dioxide (SO <sub>2</sub> ) corrosion (endurance) for sensor control unit | 33        |
| 5.31.1   | Objective   | 33        |
| 5.31.2   | Test procedure  | 33        |
| 5.31.3   | Requirements  | 34        |
| 5.32     | Electromagnetic compatibility (EMC), immunity (operational)                     | 34        |
| 5.32.1   | General   | 34        |
| 5.32.2   | State of the specimen during conditioning                                       | 34        |
| 5.32.3   | Final measurements  | 34        |
| 5.32.4   | Requirements  | 35        |
| <b>6</b> | <b>Test report</b>  | <b>35</b> |

|          |  |           |
|----------|--|-----------|
| <b>7</b> | <b>Marking</b> .....   | <b>35</b> |
|          | 7.1 General.....   | 35        |
|          | 7.2 Marking of sensor control unit.....  | 35        |
|          | 7.3 Marking of sensing element.....  | 36        |
|          | 7.4 Marking of functional units.....   | 36        |
| <b>8</b> | <b>Data</b> .....  | <b>36</b> |
|          | 8.1 Hardware documentation.....  | 36        |
|          | 8.2 Software documentation.....  | 37        |
|          | <b>Annex A (normative) Arrangement of the sensing element in the fire test room</b> .....    | <b>38</b> |
|          | <b>Annex B (normative) Flaming liquid test fires (TF6F, TF6 and TF6S)</b> .....              | <b>40</b> |
|          | <b>Annex C (normative) Mounting of the sensing element of NLTHD in the heat tunnel</b> ..... | <b>42</b> |
|          | <b>Annex D (normative) Heat tunnel for response temperature measurements</b> .....           | <b>44</b> |
|          | <b>Annex E (informative) Construction of the heat tunnel</b> .....                           | <b>45</b> |
|          | <b>Annex F (normative) Test arrangement for vibration tests for sensing element</b> .....    | <b>47</b> |
|          | <b>Annex G (normative) Test apparatus for impact test on the sensing element</b> .....       | <b>48</b> |