ISO 7240-32:2025-09 (E)

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

Contents

Page

Foreword ..... **vii**

Introduction ..... **viii**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions and abbreviations **1**

3.1 Terms and definitions 2

3.2 Abbreviations 2

4 Requirements **3**

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_2) corrosion (endurance) for sensing element 7

4.31 Sulphur dioxide (SO_2) corrosion (endurance) for sensor control unit 7

4.32 Electromagnetic compatibility (EMC), immunity (operational) 7

5 Test methods **7**
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_2) 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_2) 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

6 Test report 35

7 Marking **35**
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
8 Data **36**
8.1 Hardware documentation 36
8.2 Software documentation 37
Annex A (normative) **Arrangement of the sensing element in the fire test room** **38**
Annex B (normative) **Flaming liquid test fires (TF6F, TF6 and TF6S)** **40**
Annex C (normative) **Mounting of the sensing element of NLTHD in the heat tunnel** **42**
Annex D (normative) **Heat tunnel for response temperature measurements** **44**
Annex E (informative) **Construction of the heat tunnel** **45**
Annex F (normative) **Test arrangement for vibration tests for sensing element** **47**
Annex G (normative) **Test apparatus for impact test on the sensing element** **48**