

INTERNATIONAL STANDARD

This full version of IEC 60730-2-23:2025 includes the content of the references made to IEC 60730-1:2022

**Automatic electrical controls –
Part 2-23: Particular requirements for electrical sensors and sensing elements**

CONTENTS

FOREWORD	9
1 Scope	11
2 Normative references	11
3 Terms and definitions	16
3.1 Definitions relating to ratings, voltages, currents, frequencies, and wattages	16
3.2 Definitions of types of control according to purpose	18
3.3 Definitions relating to the function of controls	22
3.4 Definitions relating to disconnection and interruption	24
3.5 Definitions of types of control according to construction	25
3.6 Definitions of type of automatic action of a control	26
3.7 Definitions relating to protection against electric shock and type of insulation	26
3.8 Definitions relating to component parts of controls	30
3.9 Definitions of types of terminals and terminations of controls	31
3.10 Definitions relating to the connections to controls	33
3.11 Definitions relating to the performance of type 2 actions	34
3.12 Definitions relating to the requirements for creepage distances and clearances	35
3.13 Miscellaneous definitions	35
3.14 Definitions relating to manufacturer and user	37
3.15 Definitions pertaining to thermistors	37
3.16 Definitions relating to the structure of controls using software	38
3.17 Definitions relating to error avoidance in controls using software	38
3.18 Definitions relating to fault/error control techniques for controls using software	38
3.19 Definitions relating to memory tests for controls using software	38
3.20 Definitions of software terminology – General	38
3.21 Definitions relating to classes of control functions	38
3.22 Definitions relating to functional safety	38
3.23 Definitions related to access to data exchange	38
3.24 Definitions related to EMC performance	38
3.101 Definitions relating to resistance temperature detector (RTD) sensors	41
4 General	41
4.1 General structure of the document	41
4.2 General requirements	42
4.3 General notes on tests	42
5 Required technical information	47
5.1 General requirements	47
5.2 Methods of providing technical information	48
5.3 Class II symbol	55
5.4 Additional requirements for marking	55
5.5 Warning or cautionary markings	57
6 Protection against electric shock	57
6.1 General requirements	57
6.2 Actuating members and actuating means	59
6.3 Capacitors	60
6.4 Covers and uninsulated live or hazardous parts	60

6.5	Battery operated controls provided with a user accessible mains supply input connector	60
7	Provision for protective earthing	61
7.1	Class 0I and Class I controls	61
7.2	Class II and class III controls	61
7.3	Adequacy of earth connections	61
7.4	Corrosion resistance	62
7.5	Other requirements	63
7.6	Protective equipotential bonding	63
8	Terminals and terminations	63
8.1	Terminals and terminations for external copper conductors	63
8.2	Terminals and terminations for internal conductors	68
8.3	Terminals and terminations for integrated conductors	70
9	Constructional requirements	70
9.1	Materials	70
9.2	Protection against electric shock	70
9.3	Actuation and operation	72
9.4	Actions	73
9.5	Openings in enclosures	75
9.6	Mounting of controls	75
9.7	Attachment of cords	76
9.8	Size of cords – non-detachable	77
9.9	Inlet openings	78
9.10	Equipment inlets and socket-outlets	78
9.11	Requirements during mounting, use, maintenance and servicing	78
9.12	Controls using software	81
9.13	Protective controls and components of protective control systems	83
10	Threaded parts and connections	85
10.1	Threaded parts moved during mounting or servicing	85
10.2	Current-carrying connections and connections providing protective earthing continuity	87
11	Creepage distances, clearances and distances through solid insulation	88
11.1	General	88
11.2	Clearances	89
11.3	Creepage distances	93
11.4	Solid insulation	97
12	Components	98
12.1	Transformers	98
12.2	Switch mode power supplies and converters	98
12.3	Capacitors	99
12.4	Fuses	99
12.5	Varistors	99
12.6	Thermistors	99
12.7	Relays	100
12.8	Other components	100
13	Fault assessment on electronic circuits	100
13.1	Fault assessment for inherent safety	100
13.2	Fault assessment to ensure functional safety	106

14	Moisture and dust resistance	106
14.1	Protection against ingress of water and dust	106
14.2	Protection against humid conditions	107
14.3	Touch current test for in-line cord controls and free-standing controls	108
15	Electric strength and insulation resistance	109
15.1	Insulation resistance	109
15.2	Electric strength	109
15.3	Additional tests for in-line cord and free-standing controls	111
16	Heating	112
17	Manufacturing deviation and drift	116
18	Environmental stress	116
19	Endurance	116
19.101	Conditioning tests for sensors	116
20	Mechanical strength	120
20.1	General requirements	120
20.2	Impact resistance	120
20.3	Free-standing controls	121
20.4	In-line cord controls	121
20.5	Pull-cord actuated controls	122
20.6	Foot actuated controls	122
20.7	Actuating member and actuating means	122
20.8	Flexing – test	122
20.9	Cord anchorages – test	123
20.101	Drop test	124
21	Resistance to heat, fire and tracking	124
21.1	General requirements	124
21.2	Integrated, incorporated and in-line cord controls	124
21.3	Independently mounted, free-standing controls	125
22	Resistance to corrosion	126
22.1	Resistance to rusting	126
23	Electromagnetic compatibility (EMC) requirements – Emission	126
23.1	General requirement	126
23.2	High frequency emission	126
23.3	Low frequency emission	130
24	Normal operation	130
25	Electromagnetic compatibility (EMC) requirements – Immunity	130
25.1	General	130
25.2	EMC test plan and report	131
25.3	Immunity requirements	132
25.4	Performance criteria	135
25.5	Surge immunity test	136
25.6	Electrical fast transient immunity test	136
25.7	Radio-frequency electromagnetic field immunity	137
25.8	Electrostatic discharge	137
25.9	Immunity to power-frequency magnetic fields	137
25.10	Test of the influence of voltage dips and voltage interruption in the power supply network	137
26	Abnormal operation tests	137

Annex A (normative) Indelibility of markings.....	156
Annex B (normative) Measurement of creepage distances and clearances in air.....	158
Annex C (informative) Nominal voltages of supply systems for different modes of overvoltage control	162
Annex D (normative) Overvoltage categories	164
Annex E (informative) Typical usage of controls and related overvoltage categories	165
Annex F (normative) Pollution degrees	166
Annex G (normative) Resistance to heat, fire and tracking tests	167
Annex H (normative) Requirements related to functional safety	169
Annex I (normative) Requirements for certain types of DC supplied controls	223
Annex J (normative) Requirements for thermistor elements and controls using thermistors.....	225
Annex K (normative) Circuit for measuring touch current	242
Annex L (normative) Printed circuit board coating performance test.....	243
Annex M (normative) Printed circuit board protection	245
Annex N (informative) Explanatory notes for surge immunity test.....	248
Annex O (informative) Guidance for applying Clause 11	252
Annex P (normative) Requirements for SELV and PELV	255
Annex Q (informative) Regional differences relevant for the member countries of Cenelec	258
Annex R (informative) National differences relevant in the United States of America.....	262
Annex S (informative) National differences relevant in Japan	263
Annex T (informative) National differences relevant in Canada	264
Bibliography.....	265
Figure 101 – Schematic diagram of a typical sensor	21
Figure 1 – Example of ports	39
Figure 2 – Structure of the document with respect to inherent safety and functional safety.....	42
Figure 3 – Example of an electronic circuit with low power points	101
Figure 4 – Test pin probe 13 of IEC 61032:1997	138
Figure 5 – Test finger probe B of IEC 61032:1997	139
Figure 6 – Test fingernail	140
Figure 7 – Impact test for free-standing controls	141
Figure 8 – Tumbling barrel.....	141
Figure 9 – Apparatus for testing durability of markings on rating labels	142
Figure 10 – Apparatus for flexing test	143
Figure 11 – Screw terminals and stud terminals	144
Figure 12 – Pillar terminals	145
Figure 13 – Mantle terminals.....	146
Figure 14 – Saddle and lug terminals	147
Figure 15 – Tabs.....	148
Figure 16 – Tabs for non-reversible connectors	149
Figure 17 – Receptacles	150

Figure 18 – Measurement of creepage distance and clearance	151
Figure 19 – Diagram for touch current measurement at operating temperature for single-phase connection of class II controls	152
Figure 20 – Diagram for touch current measurement at operating temperature for single-phase connection of controls other than class II	152
Figure 21 – Diagram for touch current measurement at operating temperature for three-phase connection of class II controls	153
Figure 22 – Diagram for touch current measurement at operating temperature for three-phase connection of controls other than class II	154
Figure 23 – Diagram for touch current measurement at operating temperature for single-phase connection of controls to three-wire, ground neutral supply other than class II	154
Figure 24 – Diagram for touch current measurement at operating temperature for two-phase connection of controls to three-wire, ground neutral supply other than class II	155
Figure B.1 – Narrow groove	159
Figure B.2 – Wide groove	159
Figure B.3 – V-shaped groove	159
Figure B.4 – Rib	159
Figure B.5 – Uncemented joint with narrow groove	160
Figure B.6 – Uncemented joint with wide groove	160
Figure B.7 – Uncemented joint with narrow and wide grooves	160
Figure B.8 – Diverging side walls	161
Figure B.9 – Narrow recess	161
Figure B.10 – Wide recess	161
Figure B.11 – Conductive floating part	161
Figure H.1 – V-Model for the software life cycle	189
Figure H.101 – Typical flammable vapor sensor test chamber (side view external wall)	208
Figure H.102 – Typical flammable vapor sensor test chamber (side view internal cutout)	208
Figure H.103 – Typical flammable vapor sensor test chamber (top view)	209
Figure H.2 – Voltage variation test	214
Figure J.1 – Generic test circuit for inrush-current limiting thermistor endurance test	241
Figure K.1 – Circuit for measuring touch currents	242
Figure L.1 – Test sample	244
Figure M.1 – Example of type 1 protection	246
Figure M.2 – Example of type 2 protection	247
Figure N.1 – Example of surge protection by shielding in buildings with common earth reference systems	250
Figure N.2 – Example of secondary surge protection in buildings with separate common earth reference systems	251
Figure N.3 – Example of primary and secondary surge protection of indoor/outdoor equipment	251
Figure O.1 – Guidance flowchart for application of requirements of Clause 11	253
Table 101 – Samples and test sequence for sensors	44
Table 102 – Electrical and thermal ratings of a sensor	46

Table 1 – Required technical information and methods of providing these information	50
Table 2 – Cross-sectional area of conductors	64
Table 3 – Terminal conductors	66
Table 4 – Conductor pull test values	66
Table 5 – Nominal cross-sectional areas of conductors	68
Table 6 – Axial force values for tab insertion and withdrawal	69
Table 7 – Minimum cord conductor sizes	77
Table 8 – Data exchange	82
Table 9 – Threaded parts torque test values	87
Table 10 – Rated impulse voltage for equipment energized directly from the supply mains (from IEC 60664-1:2007, Table F.1)	90
Table 11 – Clearances for insulation co-ordination (from IEC 60664-1:2007, Table F.2)	91
Table 12 – Minimum creepage distances for basic insulation	95
Table 13 – Minimum creepage distances for functional insulation	96
Table 14 – Electrical/electronic component fault modes	102
Table 15 – Minimum insulation resistance	109
Table 16 – Insulation or disconnection test voltages	110
Table 17 – Maximum heating temperatures	114
Table 103 – Number of cycles for endurance test	118
Table 22 – Pull and torque values	123
Table 23 – Emission limit for residential electromagnetic environment	128
Table 24 – Emission limit for industrial electromagnetic environment	129
Table 25 – The applicable EMC test in relation to the class of control function and type of Action	130
Table 26 – Immunity test requirements for residential electromagnetic environments	133
Table 27 – Immunity test requirements for industrial electromagnetic environment	134
Table 28 – Performance criteria	136
Table B.1 – Value of X	158
Table C.1 – Inherent control or equivalent protective control	162
Table C.2 – Cases where protective control is necessary and control is provided by surge arresters having a ratio of clamping voltage to rated voltage not smaller than that specified by IEC 60099-1	163
Table E.1 – Typical usage	165
Table H.1 – Additional items to Table 1	180
Table H.2 – Acceptable measures to address fault/errors ^a	183
Table H.3 – Examples of techniques/measures for semi-formal methods	190
Table H.4 – Examples of techniques/measures for software architecture specification	190
Table H.5 – Examples of techniques/measures for module design specification	191
Table H.6 – Examples of techniques/measures for design and coding standards	191
Table H.7 – Examples of techniques/measures for software module testing	192
Table H.8 – Examples of techniques/measures for software integration testing	193
Table H.9 – Examples of techniques/measures for software safety validation	193
Table H.10 – Combinations of analytical measures during hardware development	195

Table H.11 – Examples of defences against unauthorised access and transmission failure modes	196
Table H.101 – Calibration tests and compliance criteria for sensors.....	204
Table H.102 – Calibration classes for sensors	205
Table H.103 – Temperature/relative humidity conditions	209
Table H.104 – Specifications for vapour measurement test equipment.....	209
Table H.105 – Specifications for vapour measurement test chamber.....	210
Table H.12 – Applicable test levels in addition to Clause 25.....	211
Table H.13 – Voltage dips, short interruptions and voltage variations.....	213
Table H.14 – Test values for voltage variations.....	214
Table H.15 – Test voltages for test level 2 (depending on the installation class conditions).....	216
Table H.16 – Test level for electrical fast transient burst test	217
Table H.17 – Test levels for conducted disturbances on mains and I/O lines.....	218
Table H.18 – Test level for immunity to radiated electromagnetic fields	219
Table H.19 – Increased test level for radiated immunity	220
Table H.20 – Test level for supply frequency variations	221
Table H.21 – Test level for continuous fields.....	221
Table I.1 – Electrical transient conduction immunity in accordance with ISO 7637-2	223
Table I.2 – Electrical transient conduction immunity in accordance with ISO 7637-3	224
Table J.1 – Maximum current.....	227
Table J.2 – Normal operating conditions	228
Table J.3 – Samples for the test (clause reference)	229
Table J.4 – Electrical and thermal ratings of a thermistor	230
Table J.5 – Additional items to Table 1	231
Table J.6 – Sequence of calibration and conditioning tests for PTC thermistors	233
Table J.7 – Classes for PTC sensing thermistors	234
Table J.8 – Sequence of calibration and conditioning tests for NTC thermistors.....	235
Table J.9 – Classes for NTC sensing thermistors	235
Table J.10 – Number of cycles for endurance test.....	239
Table J.11 – Ageing test temperature	239
Table J.12 – Number of cycles for endurance test.....	240
Table L.1 – Environmental cycling conditions.....	243
Table M.1 – IEC 60664-3 test levels or conditions.....	245
Table O.1 – Example A – Using Annex O guidance for applying Clause 11	254
Table O.2 – Example B – Using Annex O guidance for applying Clause 11	254
Table Q.1 – Additional aging parameters for windings.....	259

INTERNATIONAL ELECTROTECHNICAL COMMISSION

AUTOMATIC ELECTRICAL CONTROLS –

Part 2-23: Particular requirements for electrical sensors and sensing elements

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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This extended version (EXV) of the official IEC Standard provides the user with the full content of the Standard.

IEC 60730-2-23:2025 EXV includes the content of IEC 60730-2-23:2025, and the references made to IEC 60730-1:2022.

The specific content of IEC 60730-2-23:2025 is displayed on a blue background.

IEC 60730-2-23 has been prepared by IEC technical Committee 72: Automatic electrical controls. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
72/1477/FDIS	72/1481/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of the IEC 60730 series, under the general title: *Automatic electrical controls*, can be found on the IEC website.

This part 2-23 is intended to be used in conjunction with IEC 60730-1. It was established on the basis of the publication of the sixth edition of IEC 60730-1:2022.

This part 2-23 supplements or modifies the corresponding clauses in 60730-1:2022, so as to convert that publication into the IEC standards: Safety requirements for electrical sensors and sensing elements.

When a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies.

Where no change is necessary, this part 2-23 indicates that the relevant clause or subclass in IEC 60730-1 applies.

In this publication:

- 1) The following print types are used:
 - *test specifications: in italic type*;
- 2) Subclauses, notes or items which are additional to those in Part 1 are numbered starting from 101, additional annexes are lettered AA, BB, etc.
- 3) Words in **bold** in the text are defined in Clause 3.

Sensor manufacturers may refer to this Part 2 as a template to understand how to apply the relevant clauses in IEC 60730-1 and to begin designing sensors and sensing elements and apply these requirements for their devices.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

AUTOMATIC ELECTRICAL CONTROLS –

Part 2-23: Particular requirements for electrical sensors and sensing elements

1 Scope

This part of IEC 60730 applies to the safety of electrical, electro-mechanical and electronic **sensors** including **sensing elements** and any conditioning circuitry. **Sensors** covered under the scope of this document serve only to transform an activating quantity into a usable output and do not perform a control **operation** as defined in IEC 60730-1.

This document applies to **sensors** in so far as defining the reliability and accuracy of their inherent operating characteristics and corresponding response under normal and abnormal conditions within the **sensor**. **Sensors**, as defined herein, are used in or as part of an automatic electrical control or as independently mounted devices in connection with controls and control systems.

The use of this document for other applications in which **sensors** are used is possible provided that the appropriate safety is maintained as defined by the end product standard. This document applies to discrete **sensors** constructed of, but not limited to, conductive or semiconductive substrate, for the detection of activating quantities such as voltage, current, temperature, pressure, **humidity**, light (e.g. optical), gasoline vapours, and the like.

NOTE 1 Future consideration will be given to other **sensor** technologies such as chemical, mechanical and micro-electromechanical systems (MEMS), along with other activating quantities like mass flow, liquid, movement, weight, vibration, or other as needed.

This document applies to **sensing element(s)** as well as any electronic hardware, software, or other conditioning circuits that are inherent to the **sensor** and relied upon to reliably transform the input **signal** into a useable response **signal** (output) for functional safety purposes. Conditioning circuits that are inseparable from the control for which the **sensing element** relies upon to perform its desired function are evaluated by the requirements of the relevant control Part 2 standard and/or IEC 60730-1.

NOTE 2 Additional requirements can be also applied by the application standard in which the **sensor** is used.

Throughout this document, whenever it is indicated that the IEC 60730-1 requirements are applicable, the term "control(s)", is replaced by the term "**sensor(s)**", and the term "equipment" is replaced by the term "control", as they are used in IEC 60730-1, respectively, unless otherwise specified herein.

This document does not apply to **sensors** explicitly described in another relevant part 2 of the IEC 60730 series.

NOTE 3 For example, a flame **sensor** as described in IEC 60730-2-5.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60038, *IEC standard voltages*

IEC 60065:2014, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60085, *Electrical insulation – Thermal evaluation and designation*

IEC 60099-1:1991, *Surge arresters – Part 1: Non-linear resistor type gapped surge arresters for a.c. systems*¹

IEC 60112:2020, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60127 (all parts), *Miniature fuses*

IEC 60227-1, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 1: General requirements*

IEC 60245-1, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 1: General requirements*

IEC 60269 (all parts), *Low-voltage fuses*

IEC 60335-1:2020, *Household and similar electrical appliances – Safety – Part 1: General requirements*

IEC 60384-14, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*

IEC 60384-16, *Fixed capacitors for use in electronic equipment – Part 16: Sectional specification – Fixed metallized polypropylene film dielectric DC capacitors*

IEC 60384-17, *Fixed capacitors for use in electronic equipment – Part 17: Sectional specification – Fixed metallized polypropylene film dielectric AC and pulse capacitors*

IEC 60417, *Graphical symbols for use on equipment*

IEC 60423, *Conduit systems for cable management – Outside diameters of conduits for electrical installations and threads for conduits and fittings*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013

IEC 60539 (all parts), *Directly heated negative temperature coefficient thermistors*

IEC 60664-1:2007², *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC TR 60664-2 (all parts), *Insulation coordination for equipment within low-voltage systems*

¹ Withdrawn.

² Withdrawn.

IEC 60664-3:2016, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60664-4, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

IEC 60695-2-10, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60695-2-11:2021, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*

IEC 60695-10-2, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test method*

IEC 60730-1:2022, *Automatic electrical controls – Part 1: General requirements*

IEC 60738 (all parts), *Thermistors – Directly heated positive temperature coefficient*

IEC 60747-5-5, *Semiconductor devices – Part 5-5: Optoelectronic devices – Photocouplers*

IEC 60751:2022, *Industrial platinum resistance thermometers and platinum temperature sensors*

IEC 60884-1, *Plugs and socket-outlets for household and similar purposes – Part 1: General requirements*

IEC 60884-2-5:2017, *Plugs and socket-outlets for household and similar purposes – Part 2-5: Particular requirements for adaptors*

IEC 60998-2-2, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units*

IEC 60998-2-3, *Connecting devices for low-voltage circuits for household and similar purposes – Part 2-3: Particular requirements for connecting devices as separate entities with insulation-piercing clamping units*

IEC 60999-1, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm² up to 35 mm² (included)*

IEC 61000-3-2, *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

IEC 61000-3-3, *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*

IEC 61000-3-11, *Electromagnetic compatibility (EMC) – Part 3-11: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems – Equipment with rated current ≤ 75 A and subject to conditional connection*

IEC 61000-3-12, *Electromagnetic compatibility (EMC) – Part 3-12: Limits – Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase*

IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5:2014, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*
IEC 61000-4-5:2014/AMD1:2017

IEC 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-8, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*

IEC 61000-4-11, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with current up to 16 A per phase*

IEC 61000-4-13:2002, *Electromagnetic compatibility (EMC) – Part 4-13: Testing and measurement techniques – Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests*
IEC 61000-4-13:2002 /AMD1:2009
IEC 61000-4-13:2002 /AMD2:2015

IEC 61000-4-20, *Electromagnetic compatibility (EMC) – Part 4-20: Testing and measurement techniques – Emission and immunity testing in transverse electromagnetic (TEM) waveguides*

IEC 61000-4-21, *Electromagnetic compatibility (EMC) – Part 4-21: Testing and measurement techniques – Reverberation chamber test methods*

IEC 61000-4-22, *Electromagnetic compatibility (EMC) – Part 4-22: Testing and measurement techniques – Radiated emissions and immunity measurements in fully anechoic rooms (FARs)*

IEC 61000-4-28, *Electromagnetic compatibility (EMC) – Part 4-28: Testing and measurement techniques – Variation of power frequency, immunity test for equipment with input current not exceeding 16A per phase*

IEC 61000-6-1:2016, *Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity standard for residential, commercial and light-industrial environments*

IEC 61000-6-2:2016, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments*

IEC 61000-6-3:2020, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for equipment in residential environments*

IEC 61000-6-4:2018, *Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments*

IEC 61051-1, *Varistors for use in electronic equipment – Part 1: Generic specification*

IEC 61051-2, *Varistors for use in electronic equipment – Part 2: Sectional specification for surge suppression varistors*

IEC 61051-2-2, *Varistors for use in electronic equipment – Part 2: Blank detail specification for zinc oxide surge suppression varistors. Assessment level E*

IEC 61210, *Connecting devices – Flat quick-connect terminations for electrical copper conductors – Safety requirements*

IEC 61249 (all parts), *Materials for printed boards and other interconnecting structures*

IEC 61558-2-6, *Safety of transformers, reactors, power supply units and combinations thereof – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers for general applications*

IEC 61558-2-16, *Safety of transformers, reactors, power supply units and combinations thereof – Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units for general applications*

IEC 61810-3, *Electromechanical elementary relays – Part 3: Relays with forcibly guided (mechanically linked) contacts*

IEC 62151, *Safety of equipment electrically connected to a telecommunication network*

IEC 62319 (all parts), *Polymeric thermistors – Directly heated positive step function temperature coefficient*

IEC 62326 (all parts), *Printed boards*

IEC 62368-1, *Audio/video, information and communication technology equipment – Part 1: Safety requirements*

IEC 63044 (all parts), *Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS)*

CISPR 11, *Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement*

CISPR 14-1:2020, *Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emission*

CISPR 32:2015, *Electromagnetic compatibility of multimedia equipment – Emission requirements*

CISPR 32:2015/AMD1:2019

ISO 4046-4:2016, *Paper, board, pulps and related terms – Vocabulary – Part 4: Paper and board grades and converted products*

ISO 7637-2:2011, *Road vehicles – Electrical disturbances from conduction and coupling – Part 2: Electrical transient conduction along supply lines only*

ISO 7637-3:2016, *Road vehicles – Electrical disturbances from conduction and coupling – Part 3: Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines*

ISO 16484 (all parts), *Building automation and control systems (BACS)*

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Automatic electrical controls –

Part 2-23: Particular requirements for electrical sensors and sensing elements

Dispositifs de commande électrique automatiques –

Partie 2-23: Exigences particulières pour les capteurs électriques et les éléments sensibles

CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	7
3 Terms and definitions	7
4 General	11
5 Required technical information	14
6 Protection against electric shock	15
7 Provision for protective earthing	15
8 Terminals and terminations.....	15
9 Constructional requirements	15
10 Threaded parts and connections.....	16
11 Creepage distances, clearances and distances through solid insulation.....	16
12 Components	16
13 Fault assessment on electronic circuits.....	17
14 Moisture and dust resistance	17
15 Electric strength and insulation resistance	17
16 Heating.....	17
17 Manufacturing deviation and drift.....	17
18 Environmental stress	17
19 Endurance	17
20 Mechanical strength	21
21 Resistance to heat, fire and tracking.....	21
22 Resistance to corrosion	21
23 Electromagnetic compatibility (EMC) requirements – Emission	21
24 Normal operation	21
25 Electromagnetic compatibility (EMC) requirements – Immunity	21
26 Abnormal operation tests.....	22
Annex H (normative) Requirements related to functional safety	23
Annex J (normative) Requirements for thermistor elements and controls using thermistors.....	31
Bibliography.....	32
Figure 101 – Schematic diagram of a typical sensor	8
Figure H.101 – Typical flammable vapor sensor test chamber (side view external wall)	28
Figure H.102 – Typical flammable vapor sensor test chamber (side view internal cutout)	28
Figure H.103 – Typical flammable vapor sensor test chamber (top view)	29
Table 101 – Samples and test sequence for sensors	12
Table 102 – Electrical and thermal ratings of a sensor	13
Table 1 – Required technical information and methods of providing these information	14
Table 103 – Number of cycles for endurance test	19

Table H.101 – Calibration tests and compliance criteria for sensors.....	24
Table H.102 – Calibration classes for sensors	25
Table H.103 – Temperature/relative humidity conditions	29
Table H.104 – Specifications for vapour measurement test equipment.....	29
Table H.105 – Specifications for vapour measurement test chamber.....	30

INTERNATIONAL ELECTROTECHNICAL COMMISSION

AUTOMATIC ELECTRICAL CONTROLS –**Part 2-23: Particular requirements for electrical sensors and sensing elements****FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
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- 6) All users should ensure that they have the latest edition of this publication.
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- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60730-2-23 has been prepared by IEC technical Committee 72: Automatic electrical controls. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
72/1477/FDIS	72/1481/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of the IEC 60730 series, under the general title: *Automatic electrical controls*, can be found on the IEC website.

This part 2-23 is intended to be used in conjunction with IEC 60730-1. It was established on the basis of the publication of the sixth edition of IEC 60730-1:2022.

This part 2-23 supplements or modifies the corresponding clauses in 60730-1:2022, so as to convert that publication into the IEC standards: Safety requirements for electrical sensors and sensing elements.

When a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies.

Where no change is necessary, this part 2-23 indicates that the relevant clause or subclass in IEC 60730-1 applies.

In this publication:

- 1) The following print types are used:
 - *test specifications: in italic type;*
- 2) Subclauses, notes or items which are additional to those in Part 1 are numbered starting from 101, additional annexes are lettered AA, BB, etc.
- 3) Words in **bold** in the text are defined in Clause 3.

Sensor manufacturers may refer to this Part 2 as a template to understand how to apply the relevant clauses in IEC 60730-1 and to begin designing sensors and sensing elements and apply these requirements for their devices.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

AUTOMATIC ELECTRICAL CONTROLS –

Part 2-23: Particular requirements for electrical sensors and sensing elements

1 Scope

This clause of Part 1 is applicable except as follows.

Replacement:

This part of IEC 60730 applies to the safety of electrical, electro-mechanical and electronic **sensors** including **sensing elements** and any conditioning circuitry. **Sensors** covered under the scope of this document serve only to transform an activating quantity into a usable output and do not perform a control **operation** as defined in IEC 60730-1.

This document applies to **sensors** in so far as defining the reliability and accuracy of their inherent operating characteristics and corresponding response under normal and abnormal conditions within the **sensor**. **Sensors**, as defined herein, are used in or as part of an automatic electrical control or as independently mounted devices in connection with controls and control systems.

The use of this document for other applications in which **sensors** are used is possible provided that the appropriate safety is maintained as defined by the end product standard. This document applies to discrete **sensors** constructed of, but not limited to, conductive or semiconductive substrate, for the detection of activating quantities such as voltage, current, temperature, pressure, **humidity**, light (e.g. optical), gasoline vapours, and the like.

NOTE 1 Future consideration will be given to other **sensor** technologies such as chemical, mechanical and micro-electromechanical systems (MEMS), along with other activating quantities like mass flow, liquid, movement, weight, vibration, or other as needed.

This document applies to **sensing element(s)** as well as any electronic hardware, software, or other conditioning circuits that are inherent to the **sensor** and relied upon to reliably transform the input **signal** into a useable response **signal** (output) for functional safety purposes. Conditioning circuits that are inseparable from the control for which the **sensing element** relies upon to perform its desired function are evaluated by the requirements of the relevant control Part 2 standard and/or IEC 60730-1.

NOTE 2 Additional requirements can be also applied by the application standard in which the **sensor** is used.

Throughout this document, whenever it is indicated that the IEC 60730-1 requirements are applicable, the term "control(s)", is replaced by the term "**sensor(s)**", and the term "equipment" is replaced by the term "control", as they are used in IEC 60730-1, respectively, unless otherwise specified herein.

This document does not apply to **sensors** explicitly described in another relevant part 2 of the IEC 60730 series.

NOTE 3 For example, a flame **sensor** as described in IEC 60730-2-5.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60730-1:2022, *Automatic electrical controls – Part 1: General requirements*

IEC 60751:2022, *Industrial platinum resistance thermometers and platinum temperature sensors*

SOMMAIRE

AVANT-PROPOS	36
1 Domaine d'application	38
2 Références normatives	39
3 Termes et définitions	39
4 Généralités	43
5 Informations techniques exigées	46
6 Protection contre les chocs électriques	47
7 Dispositions en vue de la mise à la terre de protection	47
8 Bornes et connexions	47
9 Exigences de construction	47
10 Parties filettées et connexions	48
11 Lignes de fuite, distances dans l'air et distances à travers l'isolation solide	49
12 Éléments constitutifs	49
13 Évaluation des pannes sur les circuits électroniques	49
14 Résistance à l'humidité et à la poussière	49
15 Résistance d'isolement et rigidité diélectrique	49
16 Échauffements	49
17 Tolérances de fabrication et dérive	49
18 Contraintes climatiques	49
19 Endurance	50
20 Résistance mécanique	53
21 Résistance à la chaleur, au feu et aux courants de cheminement	54
22 Résistance à la corrosion	54
23 Exigences de compatibilité électromagnétique (CEM) – Émission	54
24 Fonctionnement normal	54
25 Exigences de compatibilité électromagnétique (CEM) – Immunité	54
26 Essais en fonctionnement anormal	54
Figures	54
Annexes	54
Annexe H (normative) Exigences relatives à la sécurité fonctionnelle	55
Annexe J (normative) Exigences pour éléments de thermistance et dispositifs de commande utilisant des thermistances	63
Bibliographie	64
Figure 101 – Schéma d'un capteur type	40
Figure H.101 – Chambre d'essai type pour les essais des capteurs de vapeur inflammable (vue latérale de la paroi externe)	60
Figure H.102 – Chambre d'essai type pour les essais des capteurs de vapeur inflammable (coupe interne en vue latérale)	60
Figure H.103 – Chambre d'essai type pour les essais des capteurs de vapeur inflammable (vue de dessus)	61
Tableau 101 – Échantillons et séquence d'essai des capteurs	44

Tableau 102 – Caractéristiques assignées électriques et thermiques d'un capteur.....	45
Tableau 1 – Informations techniques exigées et méthodes pour fournir ces informations	46
Tableau 103 – Nombre de cycles pour l'essai d'endurance	51
Tableau H.101 – Essais d'étalonnage et critères de conformité pour les capteurs	56
Tableau H.102 – Classes d'étalonnage pour les capteurs	57
Tableau H.103 – Conditions de température/d'humidité relative	61
Tableau H.104 – Spécifications des équipements d'essai de mesure de vapeur.....	61
Tableau H.105 – Spécifications pour la chambre d'essai de mesure de vapeur	62

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

DISPOSITIFS DE COMMANDE ÉLECTRIQUE AUTOMATIQUES –

Partie 2-23: Exigences particulières pour les capteurs électriques et les éléments sensibles

AVANT-PROPOS

- 1) La Commission Électrotechnique Internationale (IEC) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de l'IEC). L'IEC a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. À cet effet, l'IEC – entre autres activités – publie des Normes internationales, des Spécifications techniques, des Rapports techniques, des Spécifications accessibles au public (PAS) et des Guides (ci-après dénommés "Publication(s) de l'IEC"). Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'IEC, participent également aux travaux. L'IEC collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
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L'IEC 60730-2-23 a été établie par le comité d'études 72 de l'IEC: Commandes électriques automatiques. Il s'agit d'une Norme internationale.

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
72/1477/FDIS	72/1481/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/standardsdev/publications.

Une liste de toutes les parties de la série IEC 60730, publiées sous le titre général: *Dispositifs de commande électrique automatiques*, se trouve sur le site web de l'IEC.

La présente partie 2-23 est destinée à être utilisée conjointement avec l'IEC 60730-1. Elle a été établie sur la base de la publication de la sixième édition de l'IEC 60730-1:2022.

La présente partie 2-23 complète ou modifie les articles correspondants de l'IEC 60730-1:2022, de façon à transformer cette publication en norme IEC: Exigences de sécurité pour les capteurs électriques et les éléments sensibles.

Lorsqu'un paragraphe particulier de la Partie 1 n'est pas mentionné dans cette Partie 2, ce paragraphe s'applique.

Lorsqu'aucune modification n'est nécessaire, la présente partie 2-23 indique que l'article ou le paragraphe approprié de l'IEC 60730-1 s'applique.

Dans cette publication:

- 1) Les caractères d'imprimerie suivants sont utilisés:
 - *modalités d'essais: caractères italiques;*
- 2) Les paragraphes, notes ou articles qui s'ajoutent à ceux de la Partie 1 sont numérotés à partir de 101 et les annexes qui sont ajoutées sont désignées AA, BB, etc.
- 3) Les termes en **gras** dans le texte sont définis à l'Article 3.

Les fabricants de capteurs peuvent consulter la présente Partie 2 comme modèle pour comprendre comment appliquer les articles pertinents de l'IEC 60730-1 et pour commencer à concevoir des capteurs et des éléments sensibles et mettre en œuvre ces exigences pour leurs dispositifs.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous webstore.iec.ch dans les données relatives au document recherché. À cette date, le document sera

- reconduit,
- supprimé, ou
- révisé.

DISPOSITIFS DE COMMANDE ÉLECTRIQUE AUTOMATIQUES –

Partie 2-23: Exigences particulières pour les capteurs électriques et les éléments sensibles

1 Domaine d'application

L'article de la Partie 1 s'applique, avec l'exception suivante.

Remplacement:

La présente partie de l'IEC 60730 s'applique à la sécurité des **capteurs** électriques, électromécaniques et électroniques, y compris les **éléments sensibles** et les circuits de conditionnement éventuels. Les **capteurs** couverts par le domaine d'application du présent document permettent uniquement de transformer une grandeur de manœuvre en sortie utilisable et n'effectuent aucune **opération** de commande définie dans l'IEC 60730-1.

Le présent document s'applique aux **capteurs** dans la mesure où il définit la fiabilité et l'exactitude de leurs caractéristiques de fonctionnement intrinsèques et leur réponse correspondante dans des conditions normales et anormales à l'intérieur du **capteur**. Les **capteurs** définis dans le présent document sont utilisés dans un dispositif de commande électrique automatique ou comme partie de celui-ci, ou comme des dispositifs à montage indépendant connectés à des dispositifs et systèmes de commande.

L'application du présent document dans le cadre d'autres utilisations des **capteurs** est possible sous réserve d'assurer la sécurité adéquate, selon la définition donnée dans la norme du produit final. Le présent document s'applique aux **capteurs** discrets composés notamment d'un conducteur ou d'un substrat semiconducteur, pour la détection de grandeurs de manœuvre comme la tension, le courant, la température, la pression, l'**humidité**, la lumière (optique, par exemple), les vapeurs d'essence, etc.

NOTE 1 D'autres technologies de **capteurs** seront envisagées à l'avenir comme les systèmes chimiques, mécaniques et microélectromécaniques (MEMS) ainsi que d'autres grandeurs de manœuvre comme le débit massique, le liquide, le mouvement, le poids, les vibrations, etc.

Le présent document s'applique à l'**élément** ou aux **éléments sensibles**, ainsi qu'aux matériels électroniques, logiciels ou autres circuits de conditionnement qui sont intrinsèques au **capteur** et qui permettent de transformer de manière fiable le **signal** d'entrée en un **signal** de réponse (sortie) utilisable à des fins de sécurité fonctionnelle. Les circuits de conditionnement qui sont inséparables du dispositif de commande sur lequel repose l'**élément sensible** pour accomplir sa fonction souhaitée sont évalués conformément aux exigences de la Partie 2 applicable au dispositif de commande et/ou de l'IEC 60730-1.

NOTE 2 Des exigences supplémentaires peuvent également s'appliquer au titre de la norme d'application dans laquelle le **capteur** est utilisé.

Dans l'ensemble du présent document, s'il est indiqué que les exigences de l'IEC 60730-1 s'appliquent, le terme "dispositif(s) de commande" est remplacé par le terme "**capteur(s)**" et le terme "équipement" est remplacé par le terme "dispositif de commande", lorsque ces termes sont respectivement utilisés dans l'IEC 60730-1, sauf spécification contraire dans le présent document.

Le présent document ne s'applique pas aux **capteurs** décrits de manière explicite dans une autre partie 2 pertinente de la série IEC 60730.

NOTE 3 Par exemple, un **capteur** de flamme décrit dans l'IEC 60730-2-5.

2 Références normatives

L'article de la Partie 1 s'applique, avec l'exception suivante.

Addition:

IEC 60730-1:2022, *Dispositifs de commande électrique automatiques – Partie 1: Exigences générales*

IEC 60751:2022, *Thermomètres à résistance de platine industriels et capteurs thermométriques de platine industriels*