

IEC 60669_2_1F ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60669-2-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Switches for household and similar fixed-electrical installations Part 2-1: Particular requirements - Electronic switches			
Differences according : EN 60669-2-1:2004 + A1: 2009 + A12:2010) (used in conjunction with EN 60669-1:1999 + A1:2002 + A2:2008)			
Attachment Form No. : EU_GD_IEC60669_2_1F (to be used with Test Report Form No. IEC60669_2_1F)			
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	CENELEC COMMON MODIFICATIONS (EN)		P
8	MARKING		P
8.1 (Annex B)	Paragraph added at the end of this subclause:		N/A
	Flexible cable outlet switches: information of minimum and maximum sizes for which the anchorage is provided put on the switch and/or the packaging unit		N/A
8.3	First sentence of last paragraph before note 2 replaced by:		P
	Marking is clearly visible with normal or corrected vision, without additional magnification, marked either on the front of the switch or on the inner part of its associated enclosure, or on the main part of the switch so that it is easy legible during installation		P
8.6	First sentence of the first paragraph replaced by:		N/A
	Switches of pattern numbers 2, 3, 03 and switches with $V_n > 250$ V and $I_n > 16$ A if marked to indicate the switch position: direction of movement of the actuating member to its different positions or the actual switch position, clearly indicated		N/A
8.8	Note 2 changed into a requirement and its first sentence replaced by:		N/A
	Special precautions necessary to take when installing the switch: details of these and clear information given in an instruction sheet which accompanies the switch		N/A
9	CHECKING OF DIMENSIONS		N/A
	Paragraph added after the first paragraph:		N/A

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	Type of boxes in which switches are to be mounted: specified in the manufacturer's catalogue		N/A
10	PROTECTION AGAINST ELECTRIC SHOCK		P
10.1	Additional requirement (IEC 60669-1/A1) concerning switches designed to be fitted with pilot lights supplied at voltage other than ELV is deleted		N/A
10.3	First two line replaced by the following:		P
	Accessible parts of switches are made of insulating material		P
	"cover or cover plates" replaced by "cover, cover plates and other parts of the enclosure"		P
10.3.1	Replaced by:		N/A
	Metal covers, cover plates or other parts of enclosure protected by supplementary insulation made by insulating linings or insulating barriers		N/A
	Insulating linings or insulating barriers:		N/A
	- cannot be removed without being permanently damaged, or designed that		N/A
	- cannot be replaced in an incorrect position; if they are omitted, accessories are rendered inoperable or manifestly incomplete; there is no risk of accidental contact between live parts and metal covers or cover plates; precautions are taken to prevent creepage distances or clearances becoming less than the values specified in clause 23		N/A
10.3.2	Replaced by:		N/A
	Earthing of metal covers, cover plates or other parts of enclosure: connection of low resistance		N/A
11	PROVISION FOR EARTHING		N/A
11.1	Notes 1 and 2 changed into requirements:		N/A
	Requirement did not apply to the metal cover plates mentioned in 10.3.1		N/A
	Small screws and the like, isolated from live parts, for fixing bases, covers or cover plates, were not considered as accessible parts which can become live in the event of an insulation fault		N/A
11.2	Second paragraph replaced by:		N/A
	Earthing terminals have a capacity not less than that of the corresponding terminals for the supply conductors		N/A
12	TERMINALS		N/A

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12.2.4	Second paragraph replaced by:		N/A
	Terminals the body of which is made of materials as detailed in 22.5 considered as complying with the requirement		N/A
12.2.5	Paragraph before note 4 deleted		N/A
12.2.6	"in case where they exist in the relevant IEC standard" in the last paragraph replaced by "if any, according to HD 21.3		N/A
12.3.1	Present note numbered as note 1 and added new note 2:		N/A
	Tests of 12.3.12 carried out using rigid solid conductors only		N/A
13	CONSTRUCTIONAL REQUIREMENTS		N/A
13.16 (Annex B)	First paragraph replaced by:		N/A
	Flexible cable outlet switches: flexible cable (60245 IEC 66, 60227 IEC 52 or 60227 IEC 53, or as specified by the manufacturer) enter the switch through a suitable hole, groove or gland		N/A
	Last but one paragraph replaced:		N/A
	An a.c. voltage of 2000 V applied for 1 min between the conductors and any metal clamp of the cord anchorage		N/A
	During the test: insulation of flexible cable not damaged (no breakdown or flashover)		N/A
	Subclause added at the end:		N/A
	Flexible cable outlet switches:		N/A
	- clear how relief from strain and prevention of twisting is intended to be effected		N/A
	- cord anchorage, or at least part of it, integral with or permanently fixed to one of the component parts of the switch		N/A
	- makeshift methods not used		N/A
	- cord anchorages suitable for different type of flexible cables		N/A
	Rewirable switches with earthing connection are designed with ample space for slack of the earthing conductor		N/A
19	NORMAL OPERATION		N/A
19.102	Paragraph added after the first paragraph:		N/A
	This is not applicable to dimmers for step-down converters as these accessories are tested according to 19.101		N/A
22	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		N/A

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22.1	Second sentence of the second paragraph deleted		N/A
23	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH SEALING COMPOUND		N/A
23.3	Subclause added:		N/A
	Ordinary surface-type switches do not have bare current-carrying strips at the back		N/A
Table 20	Addition of the following NOTE:		N/A
Note 3	Items 101 and 102 apply to electronic RCS and TDS only		N/A
24	RESISTANCE OF INSULATING MATERIAL TO ABNORMAL HEAT, TO FIRE AND TO TRACKING		N/A
24.1.1	Item b) replaced by:		N/A
	Parts of insulating material not necessary to retain current-carrying parts and parts of the earthing circuit in position, even though they are in contact with them, and parts of insulating materials necessary to hold in position the earthing terminal in an enclosure, by the test made at a temperature of 650 °C		N/A
26	EMC REQUIREMENTS		N/A
	Electronic switches designed to operate correctly under the conditions of electromagnetic environment in which they are intended to be used		N/A
26.1	Immunity		N/A
	Electronic switches designed so that the switch state (ON or OFF) and/or the setting value are protected against interference		N/A
	Type of load		—
	Test current: I_n (A) / Rated load (W or VA)		—
	Test voltage: V_n (V)		—
	Electronic switches tested, if applicable, in the following states (test parameters referred to table 104):		N/A
	a) in the ON state		N/A
	For electronic switches where the setting can alter (e.g. dimming devices) the electronic switch is set at a firing angle of approx. 90° which results in an output power P_o (r.m.s.).		N/A
	A variation of P_o less than $\pm 10\%$ is not considered to be a change of the setting.		N/A
	b) in the OFF state		N/A

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	For the tests with operation, the electronic switch shall be switched ON/OFF with an operation rate of 1 operation/second or less, or the setting value shall be changed e.g. from minimum to maximum	10 operations /min	N/A
	For electronic switches whose cycle of operation is limited by their application (for example, passive infrared, time delay electronic switches, etc.), the rate of operation during the tests shall be specified by the manufacturer.		N/A
26.1.1	Voltage dips and short interruptions		N/A
	Electronic switch tested using the equipment specified in IEC 61000-4-11 in accordance with table 105: sequence: 3 dips/interruptions (duration: 10 cycles at rated frequency) with interval of 10 s minimum between each test event:		N/A
	Test level: 0 % U_T		N/A
	Test level: 40 % U_T		N/A
	Test level: 70 % U_T		N/A
	The test shall be done on the power supply lines of the electronic switch.		N/A
	During the test, the electronic switch is not operated.		N/A
	During the test, the state and setting of the electronic switch may alter, flickering is neglected		N/A
	After the test, the electronic switch shall be in the original state and setting and shall operate as intended		N/A
	After the test, the general purpose electronic switch with included automatic functions shall operate as intended		N/A
26.1.2	Surge immunity test for 1,2/50 μ s wave impulses		N/A
	Test carried out according to IEC 61000-4-5 applying two positive discharges and two negative discharges at each of the following angles 0°, 90°, 270°, at a repetition rate of (60 \pm 5) s, with an open-circuit test voltage according to Table 106		N/A
	During the test, the electronic switch is not operated.		N/A
	During the test, the state and setting of the electronic switch may alter, flickering is neglected		N/A
	After the test, the electronic switch shall be in the original state and setting and shall operate as intended		N/A
	After the test, the general purpose electronic switch with included automatic functions shall operate as intended		N/A
26.1.3	Electrical fast transient/burst test		N/A
	Test carried out according to IEC 61000-4-4 in accordance with table 107		N/A
	During the test, the electronic switch is not operated.		N/A

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	During the test, the state and setting of the electronic switch may alter, flickering caused by the electronic switch is allowed		N/A
	After the test, the electronic switch shall be in the original state and setting and shall operate as intended		N/A
	After the test, the general purpose electronic switch with included automatic functions shall operate as intended.		N/A
26.1.4	Electrostatic discharge test		N/A
	Electronic switch not intended to operate incandescent lamp: test carried out with only one load of the loads specified within the manufacturer's instructions		N/A
	Test carried out according to EN 61000-4-2 applying 10 positive and 10 negative discharge:		N/A
	- contact discharge to the conductive surface and to coupling planes (test voltage: 4 kV)		N/A
	- air discharge at insulating surfaces (test voltage: 8 kV)		N/A
	During the test, the electronic switch is not operated.		N/A
	During the test, the state and setting of the electronic switch may alter, flickering is neglected		N/A
	After the test, the electronic switch shall be in the original state and setting and shall operate as intended.		N/A
	After the test, the general purpose electronic switch with included automatic functions shall operate as intended		N/A
26.1.5	Radiated electromagnetic field test		N/A
	Test applicable only to electronic switches containing infra-red (IR) receivers, radio frequency receivers, passive infra-red (PIR) devices, devices containing microprocessors or similar		N/A
	Test is carried out according to EN 61000-4-3 by applying a field strength of 3 V/m in the frequency range 80 MHz to 1 000 MHz and 1 400 MHz to 2000 MHz with the exception of the exclusion band as defined in the relevant product standard for transmitters, receivers and duplex transceivers		N/A
	During the test, the electronic switch is operated, if it contains automatic functions or can be remotely controlled		N/A
	During and after the test, the electronic switch shall operate as intended, flickering is not allowed		N/A

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	Flickering of lamps or irregular running of motors due to switching transients caused by frequency changes of the test equipment during the test procedure is neglected		N/A
	After the test, the general purpose electronic switch with included automatic functions shall operate as intended		N/A
26.1.6	Radio-frequency voltage test		N/A
	Test applicable only to electronic switches containing infra-red (IR) receivers, radio frequency receivers, passive infra-red (PIR) devices, devices containing microprocessors or similar		N/A
	Test carried out according to IEC 61000-4-6 applying a conducted radio-frequency voltage of 3 V r.m.s. on supply lines and control lines:		N/A
	During the test, the electronic switch is operated, if it contains automatic functions or can be remotely controlled.		N/A
	During and after the test, the electronic switch shall operate as intended, flickering is not allowed		N/A
	Flickering of lamps or irregular running of motors due to switching transients caused by frequency changes of the test equipment during the test procedure is neglected		N/A
	After the test, the general purpose electronic switch with included automatic functions shall operate as intended		N/A
26.1.7	Power-frequency magnetic field test		N/A
	Test applicable only to electronic switches containing devices susceptible to magnetic fields, for example, Hall elements, electro dynamic microphones, etc.		N/A
	Test carried out according to IEC 61000-4-8 applying a magnetic field of 3 A/m, 50 Hz:		N/A
	During the test, the electronic switch is operated, if it contains automatic functions or can be remotely controlled..		N/A
	During and after the test, the electronic switch shall operate as intended, flickering is not allowed.		N/A
	Flickering of lamps or irregular running of motors due to switching transients caused by frequency changes of the test equipment during the test procedure is neglected		N/A
	After the test, the general purpose electronic switch with included automatic functions shall operate as intended		N/A
26.2	Emission		N/A
26.2.1	Low-frequency emission		N/A

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	Electronic switches designed that they do not cause excessive disturbances in the network		N/A
	Electronic switch complies with IEC 61000-3-2 and IEC 61000-3-3		N/A
	Electronic switches with electromechanically operated contact mechanism (for example, a relay) are deemed to meet the requirements of IEC 61000-3-2 without need for testing. Therefore only the mains supply terminal/terminations of those products shall be tested		N/A
26.2.2	Radio-frequency emission		N/A
	Electronic switches designed that they do not cause excessive radio interference		N/A
	a) Electronic switch complies with the requirements of EN 55014: 2006 (sub clause 8.1.4.1) at the mains terminals		N/A
	b) Electronic switch complies with the requirements of EN 55015: 2006 (sub clause 8.1.4.2) at the load and/or control terminals		N/A
101	ABNORMAL CONDITIONS		N/A
101.1.1.2	Addition of the following NOTE:		N/A
	The tripping current of the protective devices (e.g. fuses, automatic protective devices, etc.) to be used for the verification of electronic switches without incorporated temperature-limiting devices and without incorporated fuses is in accordance with the rated current of the protective device, specified by the manufacturer, intended to protect the electronic switch		N/A
	Information regarding the protective device which is intended to protect the electronic switch are specified by the manufacturers in the instruction sheets provided with the products		N/A
102	COMPONENTS		N/A
102.4.1.2	Note replaced by the following test requirement:		N/A
	For cut-outs in electronic switches for fluorescent lamps, the tests are carried out in the same way as for electronic switches for incandescent lamps		N/A
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS		N/A
7.1.7	BELGIUM, CZECH REPUBLIC, FINLAND, GERMANY, NETHERLANDS, NORWAY, SWEDEN: design B not used due to installation practice		N/A
8.1	DENMARK: symbol for earth for any space provided for an earthing terminal		N/A

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	UNITED KINGDOM: marking of type reference not used		N/A
8.3	UNITED KINGDOM: marking of type reference not used		N/A
10.2	DENMARK, NORWAY: accessories requiring earth connection cannot normally be used due to the lack of an earthing conductor in many existing old buildings		N/A
10.3	DENMARK: enclosures, including covers and cover plates, may be made of metal:		N/A
	- for ordinary switches which comply with 10.3.1		N/A
	- for switches with IP>X0 which fulfil with 10.3.1 or 10.3.2		N/A
10.3.2	DENMARK, NORWAY: accessories requiring earth connection cannot normally be used due to the lack of an earthing conductor in many existing old buildings		N/A
10.5	DENMARK, NORWAY: accessories requiring earth connection cannot normally be used due to the lack of an earthing conductor in many existing old buildings		N/A
12.2.5	DENMARK, FINLAND, NORWAY, SWEDEN: - additional test with rigid solid conductors (if exist in relevant IEC standard), if the first test has been made with rigid stranded conductors		N/A
	- in the case rigid stranded conductors do not exist, the test may be made with rigid solid conductors only		N/A
12.2.6	DENMARK, FINLAND, NORWAY, SWEDEN: additional test with one rigid solid conductor and one rigid stranded conductor with same cross-sectional areas connected at same time is required for terminals allowing the connection of two conductors		N/A
13.15.2	DENMARK, FINLAND, NORWAY, SWEDEN, SWITZERLAND: sub-clause mandatory		N/A
13.103	DENMARK, FINLAND, NORWAY, SWEDEN, SWITZERLAND, UNITED KINGDOM: Flexible cables complying with electrical strength test only are not allowed for external use		N/A
101.1.1.2	BELGIUM, FRANCE, SPAIN, SWITZERLAND: Electronic switches designed without an associated incorporated protection are loaded for one hour with the conventional tripping current of the associated protection of the lighting circuit (10 A for fuses and 16 A for CB's)		N/A

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102.1	UNITED KINGDOM: Fuses according to BS 646 and BS 1362 are deemed to satisfy this requirement		N/A
ZC	ANNEX ZC, A-DEVIATIONS		N/A
11.2	BELGIUM: earthing terminals have a capacity not less than that of corresponding terminals for the supply conductors except that any additional external earthing terminal shall be of a size suitable for conductors of at least 4 mm ²		N/A
13.103	DENMARK (Stærkstømbekendtgørelsen- Elektriske Installationer 2001, § 521.7.4)		N/A
	The insulation of external flexible cable complies with or is at least electrically and mechanically equivalent to that of flexible cables according to HD 21 or HD 22		N/A
13.103	FINLAND (Electrical Safety Act 410/1996, Degree of Ministry of Trade and Industry No. 1193/99, paragraph 4 Publication S10-2002 of the Finnish Safety Technology Authority, Finnish wiring rules SFS 6000-5-52 (HD 384.5.52), Clause 521, Table 52F)		N/A
	The insulation of external flexible cable complies with or is at least electrically and mechanically equivalent to that of flexible cables according to HD 21 or HD 22		N/A
13.103	NORWAY (DSB: FEL 1998 §28 and §10, NEK 400:2002 Clauses 520.1 and 521.1 and Table 52A)		N/A
	Cables with basic insulation are not accepted as wiring external to the switch. The insulation of external flexible cable complies with or is at least electrically and mechanical equivalent to that of flexible cables according to HD 21 or HD 22		N/A
	Cables complying with the electric strength test only are regarded as internal cables and are accepted to be installed in enclosures, conduits, ducting and trunking systems and the like		N/A
13.103	SWEDEN (ELSÄK-FS: 1999:5, Clauses 520.1 and 521.1 and Table 52-1)		N/A
	Cables with basic insulation are not accepted as wiring external to the switch. The insulation of external flexible cable complies with or is at least electrically and mechanical equivalent to that of flexible cables according to HD 21 or HD 22		N/A
	Cables complying with the electric strength test only are regarded as internal cables and are accepted to be installed in enclosures, conduits, ducting and trunking systems and the like		N/A