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Eksplozivne atmosfere - 7. del: Zaščita opreme s povečano varnostjo "e"

Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

Explosionsgefährdete Bereiche - Teil 7: Geräteschutz durch erhöhte Sicherheit "e"

Atmosphères explosives - Partie 7: Protection du matériel par sécurité augmentée "e"

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**Part 7: Equipment protection
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FOREWORD

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327 International Standard IEC 60079-7 has been prepared by IEC Technical Committee 31: Equipment for
328 explosive atmospheres.

329 **This sixth edition cancels and replaces the fifth edition published in 2015, and constitutes a technical**
330 **revision.**

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Changes	Clause	Type		
		Minor and editorial changes	Extension	Major technical changes
"Equipment" replaced by "Ex Equipment"	General	X		
Clarification of documentation to specifically point to Schedule Drawings	General	X		
Updated RTD to ETD to cover additional devices	General	X		
Changed "Electrical Machines" to "Electric Machines"	General	X		
"Ballast" replaced by "Control Gear" in Luminaire applications	General	X		
Guidance added for greater than 30 kHz	1		X	
IEC 60044-6 is replaced by IEC 61869-2	2	X		
IEC 60079-15 is added	2	X		
IEC 60664-4 is added	2	X		
IEC 60947-7-3 is added	2	X		
Battery Definitions are moved to IEC 60079-0	3	X		
Definition for " <i>ec</i> " <i>Ex Equipment Enclosure</i> added	3.2		B1	
Definition for " <i>ec</i> " <i>Ex Equipment, Partially Enclosed</i> added	3.3		B1	
Definition for "Fuse" moved to IEC 60079-0	3	X		
Definition for "LED" added along with Notes to Entry	3.7	X		
Definition for "LED module" revised	3.7.1	X		
Definition for "LED Package" revised	3.7.2	X		
Low Voltage Switchgear and Controlgear assemblies definition added	3.8	X		
Pulse Frequency definition added	3.13	X		
Semiconductor Device definition added	3.14	X		
"Solid Insulation" definition moved to IEC 60079-0	3	X		
Switching Frequency definition added	3.18	X		
Revised Definition of Terminal and added indication of domain	3.19	X		
"Safety Device" definition moved to IEC 60079-0	3	X		
"Transportable" definition moved to IEC 60079-0	3	X		
Clarification that the arcing and sparking device in an enclosure must have tool access	4.1	X		
Clarified requirements of contact pressure through insulating materials	4.2.1		X	
Addressed fused terminal blocks per IEC 60947-7-3	4.2.2.2		X	
Clarified Soldering as a connection method	4.2.3.3d)		X	
Clarified the group connections of pluggable connection	4.2.3.4c)		X	

Changes	Clause	Type		
		Minor and editorial changes	Extension	Major technical changes
Clarified the group connections of pluggable connection	4.2.3.5		X	
Clarified the group connections of pluggable connection	4.2.3.6		X	
Clarification of Terms for Socket Outlet and Inlet	4.2.4	X		
Added Field Wiring connections involving Plugs and Socket Outlets	4.2.4		X	
Clarification of Securing requirements and evaluation	4.2.4 b)		X	
Introduction into Insulation coordination	4.3			C1
Summarized Environmental conditions for Insulation coordination and provide details and application of micro- and macro- environments	4.3.1			C1
Clarified requirements for Clearance Distances	4.3.3			C1
Clarified requirements for Creepage Distances	4.3.4			C1
Clarified requirements for separation distances	4.3.4			C1
Clarified requirements Separation Distances and Coatings for Printed Circuit Boards	4.4			C1
Clarified requirements for Solid Insulating materials	4.5	X		
Clarified winding wire requirements	4.6.2b)		X	
Corrected requirements to align with IEC 60034-1	4.7.3 Table 4		X	
Requirements for "ec" moved to IEC 60079-0	4.9.1		X	
Clarification of Fastener Terms to align with IEC 60079-0	4.10	X		
Clarified applicability of IEC 60034-1	5.2.1	X		
Clarified IP requirement for machines with terminal boxes	5.2.3	X		
Clarified requirements for internal cooling fans	5.2.5		X	
Clarified requirements for air gap	5.2.6		X	
Clarified bars and rings of cage rotors are not bare conductive parts.	5.2.7.2.1		X	
Clarified assessment for possible air gap sparking	5.2.7.3		X	
Added a calling clause for Annex A	5.2.8.1	X		
Clarification of rotor temperature limits	5.2.8.2		X	
Added Section on use of current dependent safety devices	5.2.8.3		X	
Clarification on the use of temperature sensors in rotors	5.2.8.4		X	
Clarified use on operation by a converter	5.2.8.5	X		
Added instruction requirements on the maintenance of rubbing seals	5.2.12.2		X (E#)	
Added requirements for determining temperatures with anti-condensation heaters	5.2.14		X	
Removed requirements for manufacturer's declaration with respect to IEC 60598-1 for fluorescent lamps	5.3.1		X	
Added LED Package as a light source for "ec"	5.3.2.2		X	

Changes	Clause	Type		
		Minor and editorial changes	Extension	Major technical changes
Clarified electrical spacing requirements for "ec"	5.3.4.2		X (E#)	
Clarified location of over-current device	5.3.6.4	X		
Clarified evaluation of impact test for lamps	5.3.10		X	
Permitted the use of internal protection device to limit the maximum surface temperature in cell and batteries	5.6.1.1		X	
Clarified use of encapsulation for cells and batteries	5.6.2.1		X	
Clarified the use of a battery management system (BMS) for cells and batteries	5.6.2.4.2		X	
For "eb" added insulation material for battery containers	5.6.3.2.1	X		
Clarified evaluation of ventilation	5.6.3.2.7	X		
Added requirements for "ec" Ex Equipment Enclosures	5.7.2		B1	
Added requirements for "ec" Partially Enclosed Equipment	5.8		B1	
Added requirements for Low Voltage Switchgear and Controlgear Assemblies	5.9		B1	
Clarified requirements for fuses	5.11.1	X		
Clarified the determination of Temperature Class	5.11.2	X		
Requirements moved to IEC 60079-33	(former 5.10)			C2
Clarified Test Sample for electric machines	6.2.3.1.1	X		
Requirements for Drop and Impact Evaluation of portable and hand held equipment moved to IEC 60079-0	(former 6.3.2)		B2	
Changed referenced standard from IEC 60044-6 to IEC 61869-2	6.4	X		
Clarified test sample for battery box test	6.7.4	X		
Added tests for Low Voltage Switchgear and Controlgear Assemblies	6.9		X	
Clarification on the test sequence for terminal insulating materials	6.11		X	
Clarified di-electric tests for "ec"	7.1	X		
Corrected the title of the test for Insulation Resistance test of batteries	7.2	X		
Added requirements thermal assessment for Low Voltage Switchgear and Controlgear Assemblies	7.4		X	
Updated Certificate Section (was Ex Component Certificates)	8		X	
Now Ex Component Certificates	8.1		X	
Now Ex Component Certificates for Terminals	8.2		X	
Added Ex Equipment certificates are as in IEC 60079-0	8.3	X		
Added the requirements for "ec" Ex Equipment Enclosure Certificate.	8.4		B1	
Became Marking – ONLY Moved Instructions to Clause 10	9	X		

Changes	Clause	Type		
		Minor and editorial changes	Extension	Major technical changes
Clarifying that time t_E is not required when a temperature sensor is used.	9.1b)		X	
Is now for enclosures – moved the Ex Component Enclosure to 9.2.1	9.2	X		
Created for Ex Component Enclosure	9.2.1	X		
Added for “ec” Ex Equipment Enclosure	9.2.2		B1	
Was formerly 9.4 for Warning Markings	9.3	X		
Formerly Documentation, now Instructions	10	X		
Added general instruction supplement those in IEC 60079-0	10.1	X		
The additional requirements for the terminal instructions moved here form 9.3.2	10.2	X		
The additional requirements for the electric machine instructions moved here form 9.3.4	10.3	X		
The additional requirements for the luminaire instructions moved here form 9.3.3	10.5	X		
The additional requirements for the battery operated Ex Equipment instructions moved here from 9.3.1	10.7	X		
Added Instruction requirements for Partially Enclosed “ec” Ex equipment	10.6		B1	
Added Instruction requirements for Partially Enclosed “ec” Ex Equipment – mounted completely within the “ec” Ex Equipment Enclosure	10.6.1		B1	
Added Instruction requirements for Partially Enclosed “ec” Ex Equipment – mounted through the wall of the “ec” Ex Equipment Enclosure	10.6.2		B1	
Added Instruction requirements for the “ec” Ex Equipment Enclosure	10.7		B1	
Added Clause on Schedule Drawings This is a change to the Clause number only.	11 (former 10)	X		
Clarification of winding temperature measurement	A.2.2	X		
Clarification of maximum surface temperature	A.3	X		
Clarification on the selection of the temperature range for cable glands	E.1	X		
Clarification of the applicability of Annex H	H.1		X	
Revised to provide clarification on providing the user of the equipment are the applicable conditions for the use of Annex H, reworded so that they are now possible to apply by the end user.	H.2			C1
Revised to provide clarification to provide guidance on the control of pollution degree	H.3			C1
Revised to provide guidance on Transient Protection	H.4			C1
Revised to provide guidance on the use of Annex H	H.5			C1
Clarification on the application of LED Packages	Annex J		X	