



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 60204-32:2021**  
**01-julij-2021**

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**Varnost strojev - Električna oprema strojev - 32. del: Posebne zahteve za dvigovalne stroje**

Safety of machinery - Electrical equipment of machines - Part 32: Requirements for hoisting machines

Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 32: Anforderungen für Hebezeuge

Sécurité des machines - Équipement électrique des machines - Partie 32: Exigences pour les appareils de levage

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# 44/896/CDV

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IEC TC 44 : SAFETY OF MACHINERY - ELECTROTECHNICAL ASPECTS	
SECRETARIAT: United Kingdom	SECRETARY: Mrs Nyomee Hla-Shwe Tun
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input checked="" type="checkbox"/> SAFETY	
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TITLE:

**Safety of machinery - Electrical equipment of machines - Part 32: Requirements for hoisting machines**

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

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**SAFETY OF MACHINERY –  
ELECTRICAL EQUIPMENT OF MACHINES –  
Part 32: Requirements for hoisting machines**

**FOREWORD**

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International Standard IEC 60204-32 has been prepared by IEC technical committee 44: Safety of machinery – Electrotechnical aspects.

This third edition cancels and replaces the second edition published in 2008 and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) alignment to the IEC 60204-1 6<sup>th</sup> edition (2016) especially for:
  - requirements for earthing and bonding;
  - requirements for circuit protection;
  - consideration of use of Power Drive Systems;
  - protective bonding requirements and terminology;
  - requirements pertaining to safe torque off for PDS, emergency stop, and control circuit protection;
  - symbols for actuators of control devices;

- 275 b) reference for high voltage electrical equipment  
 276 c) Cableless Control System requirements  
 277 d) EMC requirements  
 278 e) technical documentation requirements;  
 279 f) general updating to current special national conditions, normative standards, and  
 280 bibliographical references.

281

282 The text of this standard is based on the following documents:

FDIS	Report on voting
44/XX/FDIS	44/XX/RVD

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284 Full information on the voting for the approval of this standard can be found in the report on voting  
 285 indicated in the above table.

286 This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

287 The following differing practices of a less permanent nature exist in the countries indicated below:

- 288 4.3.1: The voltage characteristics of electricity supplied by public distribution systems in  
 289 Europe are given in EN 50160:2010.  
 290
- 291 5.1: Exception is not allowed (USA).
- 292 5.1: TN-C systems are not permitted in low-voltage installations in buildings (Norway)
- 293 5.2: Terminals for the connection of the protective earthing conductors may be identified by  
 294 the colour green, the letters "G" or "GR" or "GRD" or "GND", or the word "ground" or  
 295 "grounding", or with the graphical symbol IEC 60417 519 (DB: 2002-10 ) or any  
 296 combination (USA).  
 297
- 298 6.3.3 b),  
 299 13.4.5 b),  
 300 18.2.1: TT power systems are not allowed (USA).  
 301
- 302 6.3.3,  
 303 18.2,  
 304 Annex A: TN systems are not used. TT systems are the national standard (Japan)  
 305
- 306 6.3.3 b) The use of residual current protective devices with a rated residual operating  
 307 current not exceeding 1 A is mandatory in TT systems as a means for fault  
 308 protection by automatic disconnection of supply (Italy).  
 309
- 310 7.2.3: Disconnection of the neutral conductor is mandatory in a TN-S system (France  
 311 and Norway).  
 312
- 313 7.2.3: Third paragraph: distribution of a neutral conductor with an IT system is not  
 314 allowed (USA and Norway).  
 315
- 316 7.10: For evaluation of short circuit ratings the requirements of UL 508A Supplement  
 317 SB, may be used (USA).  
 318
- 319 8.2.2: See IEC 60364-5-54:2011, Annex E List of notes concerning certain countries.  
 320 Maximum nominal AC control circuit voltage is 120 V (USA).  
 321  
 322  
 323
- 324 9.1.2: Only stranded wires are allowed on machines, except for 0,2 mm<sup>2</sup> solid

- 325 conductors within enclosures (USA).  
 326  
 327 12.2: The smallest power circuit conductor allowed on machines is 0,82 mm<sup>2</sup> (AWG 18)  
 328  
 329 Table 5: Cross-sectional area is specified in NFPA 79 using American Wire Gauge (AWG)  
 330 (USA). See Annex G.  
 331  
 332 13.2.2: For the protective conductor, the colour identification GREEN (with or without  
 333 YELLOW stripes) is used as equivalent to the bicolour combination GREEN-AND  
 334 YELLOW (USA and Canada).  
 335  
 336 13.2.3: The colour identification WHITE or GREY is used for earthed neutral conductors  
 337 instead of the colour identification BLUE (USA and Canada).  
 338  
 339 15.2.2: First paragraph: Maximum value between conductors 150 V (USA).  
 340  
 341 15.2.2: Second paragraph, 5th bullet: The full load current rating of lighting circuits does  
 342 not exceed 15 A (USA).  
 343  
 344 16.4: Nameplate marking requirements (USA).  
 345  
 346 A.2.2.2: The permissible maximum value of  $R_A$  is regulated (e.g. when  $U_0 > 300\text{V}$ ,  $R_A$   
 347 shall be less than  $10\ \Omega$ ; when  $U_0 < 300\ \text{V}$ ,  $R_A$  shall be less than  $100\ \Omega$ ,  $U_0$  is the  
 348 nominal AC line to earth voltage in volts (V) (Japan).  
 349  
 350 A.2.2.2: The maximum permissible value of  $R_A$  is  $83\ \Omega$  (Netherlands)

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352 The committee has decided that the contents of this publication will remain unchanged until the  
 353 maintenance result date<sup>1</sup> indicated on the IEC web site under "http://webstore.iec.ch" in the data related  
 354 to the specific publication. At this date, the publication will be

- 355 - reconfirmed,
- 356 - withdrawn,
- 357 - replaced by a revised edition, or
- 358 - amended.

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<sup>1</sup> The National Committees are requested to note that for this publication the maintenance result date is 2021.

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369

## INTRODUCTION

370 This part of IEC 60204 provides requirements and recommendations relating to the electrical equipment  
371 of hoisting machines so as to promote

- 372 - safety of persons and property;
- 373 - consistency of control response;
- 374 - ease of operation and maintenance.

375 High performance is not to be obtained at the expense of the essential factors mentioned above.

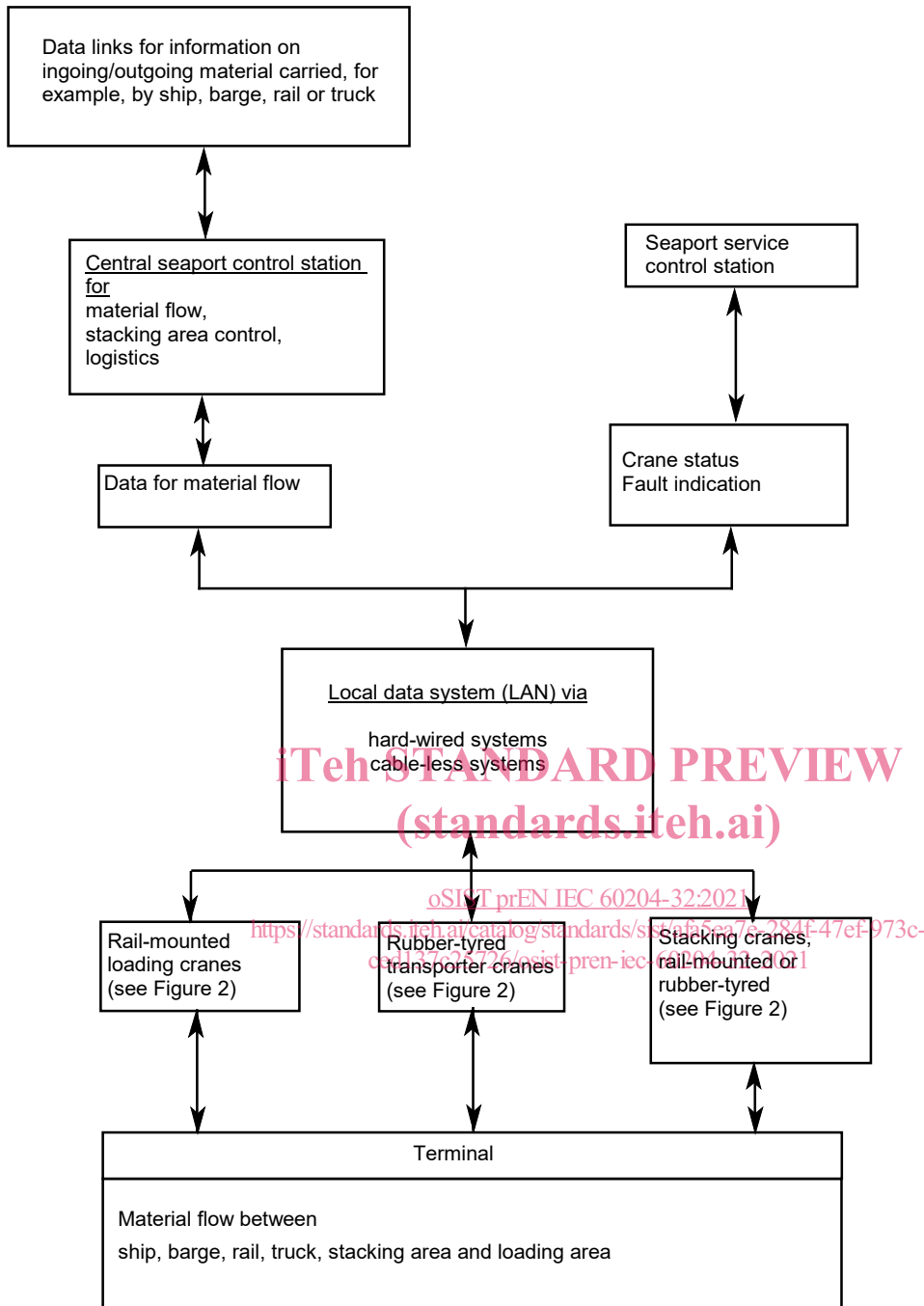
376 Figures 1 and 2 have been provided as an aid to understanding the interrelationship of the various  
377 elements of a hoisting machine and its associated equipment. Figure 1 is an overall block diagram of a  
378 typical material handling system (a group of cranes working together in a coordinated manner) and  
379 Figure 2 is a block diagram of a typical crane and associated equipment showing the various elements  
380 of the electrical equipment addressed in this standard.

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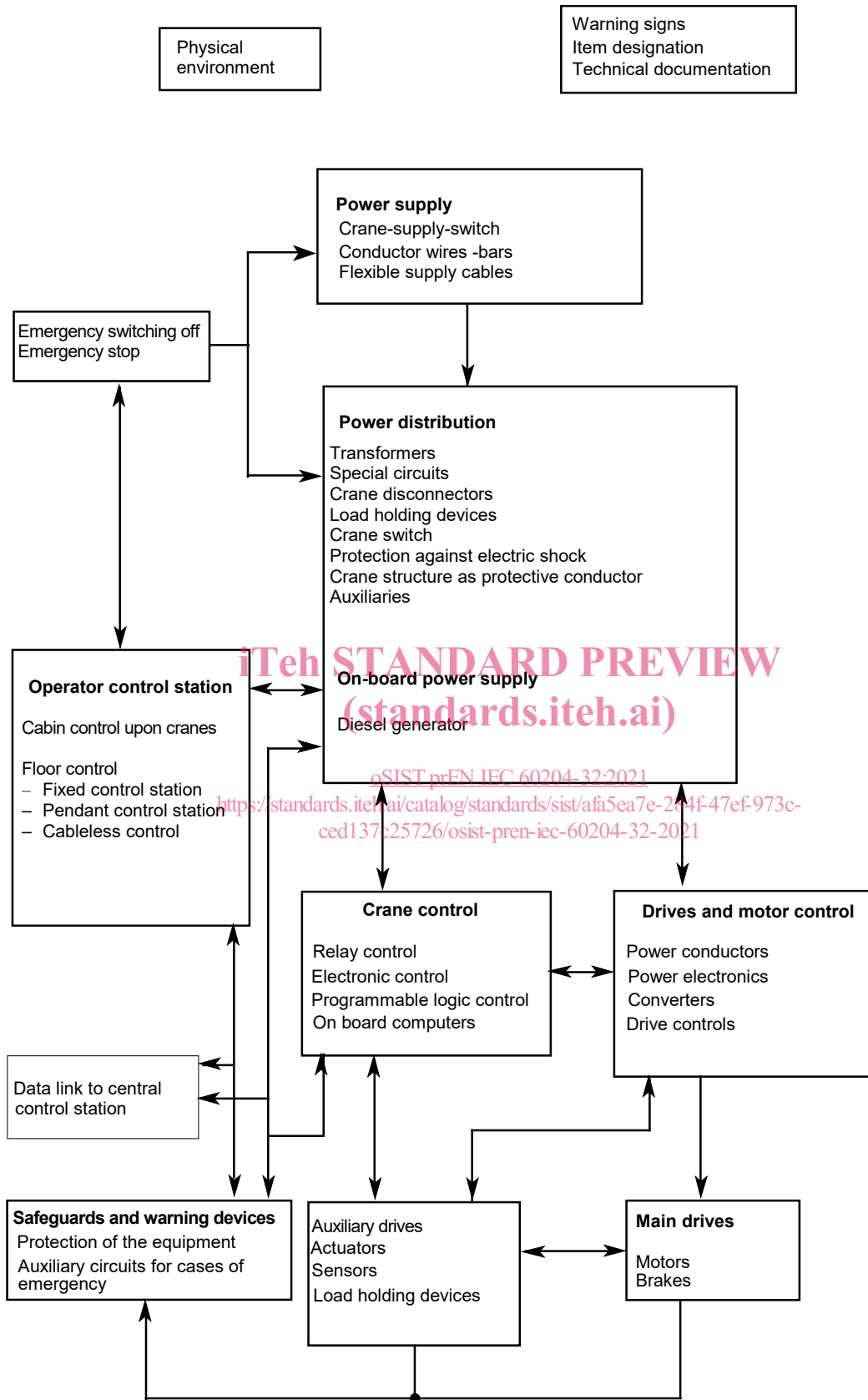
IEC 1310/98

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383 **Figure 1 – Block diagram of combined working cranes in a typical material handling**  
 384 **system in a seaport**

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IEC 1311/98

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Figure 2 – Block diagram of a typical crane and its associated electrical equipment

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## SAFETY OF MACHINERY – ELECTRICAL EQUIPMENT OF MACHINES – Part 32: Requirements for hoisting machines

### 394 1 Scope

395 This part of IEC 60204 applies to electrical, electronic, programmable electronic equipment and systems  
396 to hoisting machines and related equipment, including a group of hoisting machines working together in  
397 a co-ordinated manner

398 NOTE 1 In this part of IEC 60204, the term “electrical” includes both electrical and electronic matters (i.e. “electrical equipment”  
399 means both the electrical, electronic and programmable electronic equipment).

400 NOTE 2 In the context of this part of IEC 60204, the term “person” refers to any individual and includes those persons who are  
401 assigned and instructed by the user or user’s agent(s) in the use and care of the hoisting machine in question.

402 The equipment covered by this part of IEC 60204 commences at the point of connection of the supply  
403 to the electrical equipment of the hoisting machine (crane-supply-switch) and includes systems for  
404 power supply and control feeders situated outside of the hoisting machine, for example, flexible cables  
405 or conductor wires or conductor bars (see Figure 3).

406 NOTE 3 The requirements for the electrical supply installation of electrical equipment of a hoisting machine are given in IEC  
407 60364.

408 This standard is applicable to equipment or parts of equipment not exceeding 1 000 V AC or  
409 1 500 V DC between lines and with nominal frequencies not exceeding 200 Hz.

410 NOTE 4 Special requirements for electrical equipment of hoisting machines intended to be operated at higher voltages, see  
411 IEC 60204-11 (Annex D)

412 This part of IEC60204 does not cover all the requirements (for example guarding, interlocking, or control)  
413 that are needed or required by other standards or regulations in order to protect persons from hazards  
414 other than electrical hazards. Each type of hoisting machine has unique requirements to be  
415 accommodated to provide adequate safety. This part of 60204 doesn’t cover noise risks and vibration  
416 risks.

417 Additional and special requirements can apply to the electrical equipment of hoisting machines including  
418 those that

- 419 - handle or transport potentially explosive material (e.g. paint or sawdust);
- 420 - are intended for use in potentially explosive and/or flammable atmospheres;
- 421 - have special risks when transporting or moving certain materials
- 422 - are intended for use in mines.

423 For the purposes of this standard, hoisting machines include cranes of all types, winches of all types  
424 and storage and retrieval machines. The following product groups are included:

- 425 - overhead travelling cranes;
- 426 - mobile cranes;
- 427 - tower cranes;
- 428 - slewing luffing cranes;
- 429 - gantry cranes;
- 430 - offshore cranes;
- 431 - floating cranes;
- 432 - winches of all types;
- 433 - hoists and accessories;
- 434 - loader cranes;