SVENSK STANDARD

SS-EN 50156-1, utg 3:2025

Fastställd	Sida	Ansvarig kommitté
2025-05-07	1 (97)	SEK TK 44

Elutrustning för ugnar och pannor – Del 1: Val och användning

Electrical equipment for furnaces and ancillary equipment – Part 1: Requirements for application design and installation

Som svensk standard gäller europastandarden EN 50156-1:2024. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50156-1:2024.

Nationellt förord

Tidigare fastställd svensk standard SS-EN 50156-1, utg 2:2015 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2027-10-07.

ICS 27.060.01

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: Box 1042, 172 21 Sundbyberg
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

SEK Svensk Elstandard

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50156-1

November 2024

ICS 27.060.01

Supersedes EN 50156-1:2015

English Version

Electrical equipment for furnaces and ancillary equipment – Part 1: Requirements for application design and installation

Equipements électriques d'installation de chaudière - Partie 1: Règles pour la conception, pour l'application et l'installation

Elektrische Ausrüstung von Feuerungsanlagen und zugehörige Einrichtungen - Teil 1: Bestimmungen für die Anwendungsplanung und Errichtung

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 50156-1:2024 E

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European foreword

This document (EN 50156-1:2024) has been prepared by CLC/BTTF 132-2 “Revision of EN 50156 ‘Electrical equipment for furnaces and ancillary equipment’”.

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2025-10-07
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2027-10-07

This document supersedes EN 50156-1:2015 and all of its amendments and corrigenda (if any).

EN 50156-1:2024 includes the following significant technical changes with respect to EN 50156-1:2015:

— harmonization of the definitions to the new version of EN 61508:2010;

— check and updating of the normative references;

— significant changes in subclause 4.1 and Clause 10;

— EN 50156-3 will not be created.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a standardization request addressed to CENELEC by the European Commission.

This document covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits 2014/35/EU [2014 OJ L96].

This document is the first part of a series of European Standards which specify the requirements for equipment of safety functions for furnaces, especially safety-related system to protect personnel, the furnace with its ancillary equipment against hazards related to heat generation, the heated system and to operate reliably during normal conditions, and abnormal conditions which can be foreseen.

This document has been prepared by the German National Committee with the participation of experts of other National Committees. It is currently divided into 2 parts under the generic title “Electrical equipment for furnaces and ancillary equipment”:

— Part 1: Requirements for application design and installation;

— Part 2: Requirements for design, development and type approval of safety devices and subsystems.

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

Introduction

This Part of EN 50156 specifies the requirements and recommendations for the application design and installation of electrical and control equipment for furnaces and ancillary equipment and for the systems heated by the thermal energy released in the furnace to ensure:

— safety of personnel, property and the environment;

— consistency of proper function.

The operating conditions of the furnace, the hazards of combustion and the safety of heated systems are considered.

A safety-related system consisting of safety devices for

— monitoring of flames and other safety conditions of the firing,

— interrupting the flow of fuel to the furnace,

— ventilating the body of the furnace and the flue gas ducts,

— monitoring of the safety condition of the heated systems (e.g. water level limiter in steam boilers),

may be necessary to ensure proper ignition and combustion of fuel and to avoid the development, existence and/or ignition of an explosive mixture of fuel and air, and also to avoid damage to the heated systems (see 3.22).

The rating of necessary safety integrity levels is based on EN 61508-1:2010.

Figure 1 is provided as an aid to understanding the relationship between the various elements of furnaces and their ancillary equipment, the heated systems, the control system and the safety-related systems.

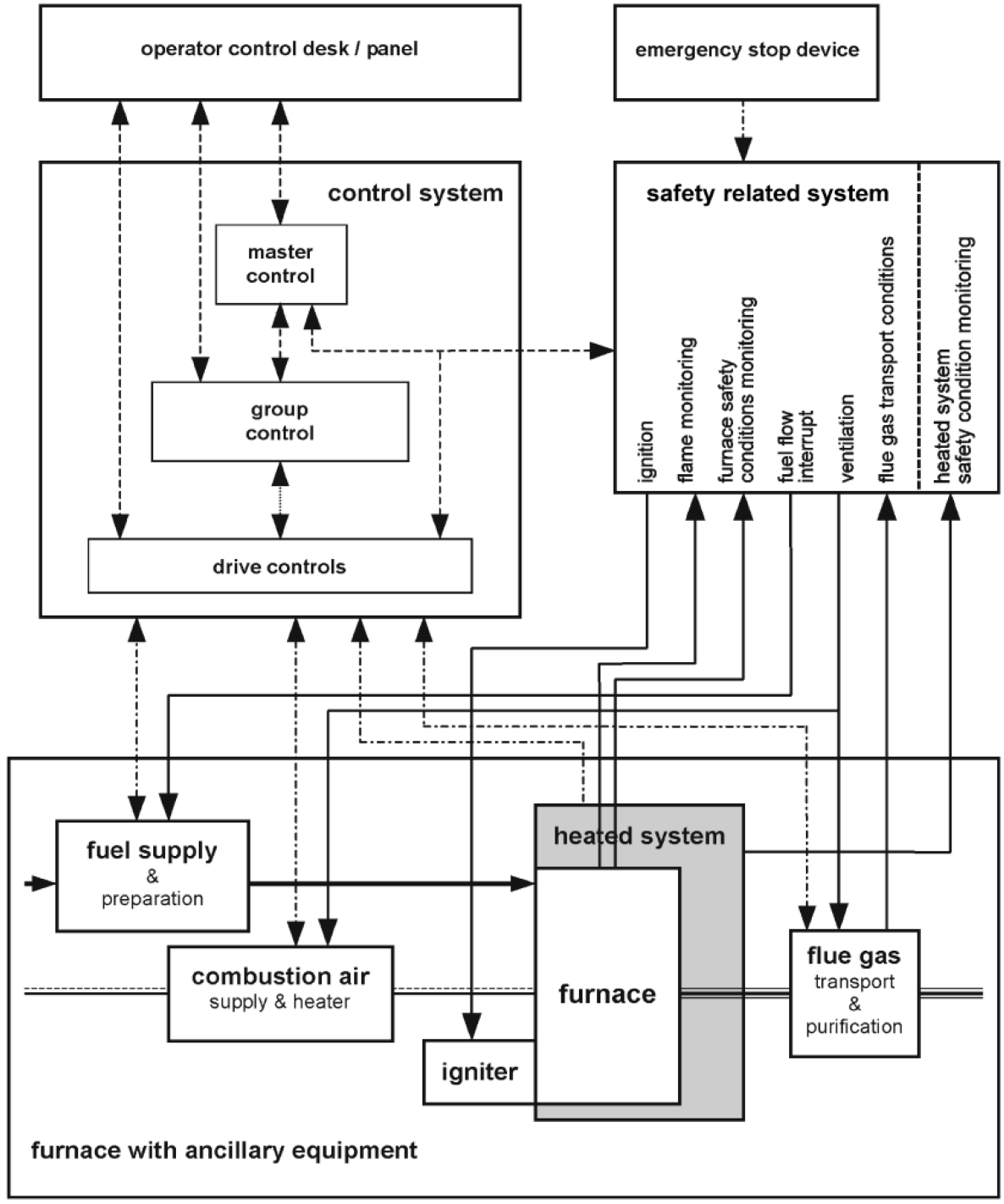

Figure 1 — Example of the functionality of a furnace with its ancillary equipment, heated systems and relationship to control system and safety-related system

1 Scope

This document applies to the application design and installation of electrical equipment, control circuits and safety-related systems for furnaces which are operated with solid, liquid or gaseous fuels and their ancillary equipment. It specifies requirements to meet the operating conditions of furnaces, to reduce the hazards of combustion and to protect the heated systems from damage e.g. by overheating.

Such furnaces and the electrical equipment can be part by way of example of the following plant:

a) water heating systems;

b) steam boiler installations (steam and hot-water boilers) and heat recovery steam boilers;

NOTE 1 The requirements of this document apply according to the electrical equipment of electrically heated steam boilers.

NOTE 2 Seagoing vessels and offshore facilities are governed by International Maritime Law and as such are not within the scope of this document. These requirements can be used for such facilities.

c) warm air heaters;

d) hot-gas heaters;

e) heat exchanger systems;

f) combustion chambers of stationary turbines;

g) as long as no other standard is applicable for combined heat and power stations, we recommend the use of the requirements of this document;

This document can also be used as reference for electrical equipment requirements for thermo-processing equipment.

The requirements in this document are not applicable to electrical equipment for:

1) non-electrically heated appliances and burner control systems for household and similar purposes;

2) furnaces using technologies for the direct conversion of heat into electrical energy;

3) combustion chambers of non-stationary prime movers and turbines;

4) central oil supply systems for individual heating appliances;

5) furnaces using solid fuels for heating purposes for household use with a nominal thermal output up to 1 MW;

6) furnaces which are used to heat process fluids and gasses in chemical plant.

This document can be used as a basis for the requirements placed on electrical equipment for furnaces, which are excluded from its field of application.

This document specifies special requirements for the management of functional safety.

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.

EN 1854:2022+A1:2023, *Safety and control devices for burners and appliances burning gaseous and/or liquid fuels — Pressure sensing devices for gas burners and gas burning appliances*

EN 14597:2012, *Temperature control devices and temperature limiters for heat generating systems*

EN 50156-2, *Electrical equipment for furnaces and ancillary equipment — Part 2: Requirements for design, development and type approval of safety devices and subsystems*

EN 55011:2016,[1] *Industrial, scientific and medical equipment — Radio-frequency disturbance characteristics — Limits and methods of measurement (CISPR 11:2015)*

EN 60034-1:2010, *Rotating electrical machines — Part 1: Rating and performance (IEC 60034-1:2010)*

EN 60034 (series), *Rotating electrical machines (IEC 60034)*

EN IEC 60309-1:2022, *Plugs, fixed or portable socket-outlets and appliance inlets for industrial purposes — Part 1: General requirements (IEC 60309-1:2021)*

EN 60332-1-1:2004, *Tests on electric and optical fibre cables under fire conditions — Part 1-1: Test for vertical flame propagation for a single insulated wire or cable — Apparatus (IEC 60332-1-1:2004)*

EN 60332-2-1:2004, *Tests on electric and optical fibre cables under fire conditions — Part 2-1: Test for vertical flame propagation for a single small insulated wire or cable — Apparatus (IEC 60332-2-1:2004)*

EN 60519 (series), *Safety in electroheating installations*

EN 60529:1991,[2] *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 60654-3:1997, *Operating conditions for industrial-process measurement and control equipment — Part 3: Mechanical influences (IEC 60654-3:1983)*

EN 60947-2:2017,[3] *Low-voltage switchgear and controlgear — Part 2: Circuit-breakers (IEC 60947-2:2016)*

EN 60947-5-1:2017, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices (IEC 60947-5-1:2016)*

EN 61000-4 (series), *Electromagnetic compatibility (EMC) (IEC 61000-4)*

EN 61000-6-7:2015, *Electromagnetic compatibility (EMC) — Part 6-7: Generic standards — Immunity requirements for equipment intended to perform functions in a safety-related system (functional safety) in industrial locations (IEC 61000-6-7:2014)*

EN 61082-1:2015, *Preparation of documents used in electrotechnology — Part 1: Rules (IEC 61082-1:2014)*

EN 61508-1:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 1: General requirements (IEC 61508-1:2010)*

EN 61508-2:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems (IEC 61508-2:2010)*

EN 61508-3:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 3: Software requirements (IEC 61508-3:2010)*

[1] As amended by EN 55011:2016/A1:2017, EN 55011:2016/A11:2020 and EN 55011:2016/A2:2021.
[2] As amended by EN 60529:1991/A1:2000, EN 60529:1991/corrigendum May 1993, EN 60529:1991/A2:2013, EN 60529:1991/A2:2013/AC:2016-12, EN 60529:1991/A2:2013/AC:2019-02.
[3] As impacted by EN 60947-2:2017/A1:2020.

EN 61508-6:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 6: Guidelines on the application of IEC 61508-2 and IEC 61508-3 (IEC 61508-6:2010)*

EN 61810-1:2015, *Electromechanical elementary relays — Part 1: General and safety requirements (IEC 61810-1:2015)*

EN IEC 81346-1:2022, *Industrial systems, installations and equipment and industrial products — Structuring principles and reference designations — Part 1: Basic rules (IEC 81346-1:2022)*

EN IEC 60445:2021, *Basic and safety principles for man-machine interface, marking and identification — Identification of equipment terminals, conductor terminations and conductors (IEC 60445:2021)*

EN IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage systems — Part 1: Principles, requirements and tests (IEC 60664-1:2020)*

EN IEC 60947-3:2021, *Low-voltage switchgear and controlgear — Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units (IEC 60947-3:2020*)

EN IEC 60947-4-1:2019, *Low-voltage switchgear and controlgear — Part 4-1: Contactors and motor-starters — Electromechanical contactors and motor-starters (IEC 60947-4-1:2018)*

EN IEC 61000-6-4:2019, *Electromagnetic compatibility (EMC) — Part 6-4: Generic standards — Emission standard for industrial environments (IEC 61000-6-4:2018)*

EN IEC 61558-1:2019, *Safety of transformers, reactors, power supply units and combinations thereof — Part 1: General requirements and tests (IEC 61558-1:2017)*

IEC 60364-4 (series), *Low-voltage electrical installations — Part 4: Protection for safety*

HD 60364-4-41:2017,[4] *Low-voltage electrical installations — Part 4-41: Protection for safety — Protection against electric shock (IEC 60364-4-41:2005)*

IEC 60417 DB, *Graphical symbols for use on equipment*

IEC 60617 DB:2024, *Graphical symbols for diagrams*

ISO 3864 (series)*, Graphical symbols — Safety colours and safety signs*

[4] As amended by HD 60364-4-41:2017/A11:2017 and HD 60364-4-41:2017/A12:2019.