

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-ZE-11321-01-00 according to DIN EN ISO/IEC 17065:2013

Period of validity: 09.02.2018 to 08.02.2023 Date of issue: 09.02.2018

Holder of certificate:

TÜV SÜD Product Service GmbH
Certification body for products CRT MUC

with its locations in Germany:

Ridlerstraße 65, 80339 München
Daimlerstraße 11, 85748 Garching
Daimlerstraße 40, 60314 Frankfurt/Main

Certification of products, processes and services in the fields:

Toys,
Gas appliances,
Personal protective equipment,
Machinery,
Recreational craft,

Equipment and protective systems intended for use in potentially explosive atmospheres,
Bicycles, sports and leisure products, tools, furniture
for the procedures and products listed in the annex

TÜV SÜD internal certification schemes for voluntary conformity assessment for the
procedures and products listed in Section III;

Certification of fire detection and alarm systems (system for assessment and verification
of constancy of performance 1) within the scope of Regulation No. 305/2011 laying
down harmonised conditions for the marketing of construction products (Construction
Products Regulation)

Abbreviations used: see last page

*The certification basis is marked with the location symbols listed in the following, at
which technical certifications are performed:*

F = Frankfurt/Main

G = Garching

M = Munich

Annex to the accreditation certificate D-ZE-11321-01-00

I. Products in accordance with the following directives and regulations of the European Parliament including their relevant annexes

1.1 Toys (G)

Directive 2009/48/EC Article 20 (Module B, EC type examination)

for toys in accordance with Article 2 of Directive 2009/48/EC

For the product areas named in the following:

- Walk-in toys
- Movement toys
- Missile toys
- Educational toys (without chemicals)
- Educational toys (with chemicals)
- Model toys and functional toys
- Dolls and textile toys
- Sand toys with sandboxes
- Writing, painting and moulding toys
- Toys with electrical drive; nominal voltage up to 24 volt
- Activity toys for domestic use (indoor and outdoor areas)
- Dressing up toys
- Sports toys
- Entertainment toys
- Water toys
- Toys for children up to the age of 36 months

The certification body fulfils the requirements according to § 13 of the German Product Safety Act, of the 2nd ProdSV (Product Safety Regulations) and Directive 2009/48/EC, in particular of Article 26.

1.2 Gas appliances (G,M)

Directive 2009/142/EC Annex II No. 1 (EC type examination)
Annex II No. 2 (EC declaration of conformity to type)
Annex II No. 3 (Quality assurance system)
Annex II No. 4 (EC declaration of type conformity -
guarantee of product quality)
Annex II No. 5 (EC verification)
Annex II No. 6 (EC unit verification)

for products in accordance with Article 1 of the Directive relating to appliances burning gaseous fuels.

The certification body fulfils the requirements according to § 13 of the German Product Safety Act, of the 7th ProdSV (Product Safety Regulations) and Directive 2009/142/EC, in particular of Annex V "Minimum criteria for assessment of notified bodies".

Annex to the accreditation certificate D-ZE-11321-01-00

Regulation (EU) 2016/426 Annex III No. 1 (Module B, EU type examination)
Annex III No. 2 (Module C2, declaration of conformity to EU type)
Annex III No. 3 (Module D, quality assurance system)
Annex III No. 4 (Module E, declaration of conformity to EU type
guarantee of product quality)
Annex III No. 5 (Module F, EU verification)
Annex III No. 6 (Module G, EU unit verification)

for products in accordance with Article 1 of the Regulation on appliances burning gaseous fuels.

The certification body fulfils the requirements according to § 13 of the German Product Safety Act and of Regulation (EU) 2016/426.

1.3 Personal protective equipment (G)

Directive 89/686/EEC Article 10 (EC type examination)
Article 11 A (EC quality control system for the final product)

For the product areas named in the following:

- Eye protective equipment
- Equipment for protection against falls from a height
- Equipment for the prevention of drowning
- Foot and leg protective equipment
- Full and partial face protective equipment
- Hand and arm protective equipment
- Head protective equipment
- Equipment for protection against avalanche burial
- Protective clothing

The certification body fulfils the requirements according to § 13 of the German Product Safety Act, the 8th ProdSV (Product Safety Regulations) and Directive 89/686/EEC, in particular of Annex V "Conditions to be fulfilled by the bodies of which notification has been given".

Regulation (EU) 2016/425 Conformity assessment activities incl.
testing/examination/checking activities within the scope
of Regulation (EU) 2016/425 [Annex V and Annex VII]

Annex to the accreditation certificate D-ZE-11321-01-00

For the product areas named in the following:

- Buoyancy aids
- Chest and groin protection
- Eye protection
- Face protection
- Foot, leg and anti-slipping protection
- General body protection (clothing)
- Hand and arm protection
- Head protection
- Protective equipment against heat [Temperature > 100°C, and fire and flames]
- Protective equipment against drowning
- Protective equipment against electrical and magnetic fields and waves
- Protective equipment against falls
- Protective equipment against harmful biological agents
- Protective equipment against mechanical risks
- Protective equipment against non-ionising radiation
- Protective equipment against slipping
- Protective equipment against substances and mixtures hazardous to health
- Protective equipment against vibrations
- Special area of competence: Protective clothing for firefighters
- Special area of competence: Protective clothing for motorbike riders

The certification body fulfils the requirements according to § 13 of the German Product Safety Act and of Regulation (EU) 2016/425.

1.4 Machinery

(F,G,M)

Directive 2006/42/EC Annex IX (EC type examination)

for machinery according to Annex IV of the Machinery Directive

For the product areas named in the following:

- Circular saws (single- or multi-blade) for working with wood and material with similar physical characteristics or for working with meat and material with similar physical characteristics
- Hand-fed surface planing machinery for woodworking
- Planing machines for one-sided dressing having a built-in mechanical feed device, with manual loading and/or unloading for woodworking
- Band-saws with manual loading and/or unloading for working with wood and material with similar physical characteristics or for working with meat and material with similar physical characteristics
- Combined machinery for working with wood and material with similar physical characteristics
- Hand-fed tenoning machinery with several tool holders for woodworking

Annex to the accreditation certificate D-ZE-11321-01-00

- Hand-fed vertical spindle moulding machinery for working with wood and material with similar physical characteristics
- Portable chainsaws for woodworking
- Presses, including press-brakes, for the cold working of metals, with manual loading and/or unloading, whose movable working parts may have a travel exceeding 6 mm and a speed exceeding 30 mm/s
- Injection or compression plastics-moulding machinery with manual loading or unloading
- Injection or compression rubber-moulding machinery with manual loading or unloading
- Manually loaded trucks for the collection of household refuse incorporating a compression mechanism
- Vehicle servicing lifts
- Devices for the lifting of persons or of persons and goods involving a hazard of falling from a vertical height of more than 3 m
- Protective devices designed to detect the presence of persons
- Power-operated interlocking movable guards designed to be used as safeguards in Machinery
- Logic units to ensure safety functions

The certification body fulfils the requirements according to § 13 of the German Product Safety Act, of the 9th ProdSV (Product Safety Regulations) and Directive 2006/42/EC, in particular of Annex XI "Minimum criteria for the notification of bodies".

1.5 Recreational craft

(G)

EG type examination, and post-construction assessment of watercraft according to Directive 2013/53/EU (Recreational craft directive)

Product(s)/product group(s)	Certification standard
Decision 768/2008/EC, Annex II 2008-07	Module A1, internal production control plus supervised product testing
Decision 768/2008/EC, Annex II 2008-07	Module B, EC type examination (together with Module D, E, F)
Decision 768/2008/EC, Annex II 2008-07	Module G, Conformity based on unit verification
Directive 2013/53/EU, Annex V 2013-11	Equivalent conformity on the basis of the post-construction assessment (Module PCA)

the above-named certification schemes in conjunction with the essential requirements according to Annex I of the Directive and the published harmonised standards as defined in Article 14 of the Directive

Annex to the accreditation certificate D-ZE-11321-01-00

The certification body for products fulfils the requirements according to § 13 of the German Product Safety Act, the 10th regulations to the Product Safety Act and Directive 2013/53/EU (Recreational craft directive), in particular Article 30 "Requirements relating to notified bodies".

**1.6 Equipment and protective systems for use in potentially explosive atmospheres (M)
(Ex-protection)**

Directive 2014/34/EU Conformity assessment according to
Annex III (EC type examination)
Annex V (Verification of the products)
Annex VI (Conformity to type)
Annex IX (Unit verification)

for equipment and protective systems in accordance with Article 1 of the Directive.

The certification body fulfils the requirements according to § 13 of the German Product Safety Act, of the 11th ProdSV (Product Safety Regulations) and Directive 2014/34/EU relating to equipment and protective systems for use in potentially explosive atmospheres, in particular Article 21.

**II. Conformity assessments in accordance with § 20 German Product Safety Act (F,G,M)
(granting of the GS marking)**

for the product areas named in the following:

- general electrical equipment and general electrical equipment with heating or radiation and gas. oil and solid fuel-fired appliances with electrical connections, electrical and non-electrical products with food contact
- electrical and non-electrical products with skin contact, incl. scales
- Luminaires/light sources and lamps
- Power supply units
- Electricity generators/storage batteries/transformers
- Distribution boards
- Audio, video and similar electronic products and accessories
- Information technology equipment with and without ergonomics of visual display terminals and mechanical office products
- Laboratory equipment, electrical measurement and testing equipment, control equipment, safety barriers
- Laser equipment
- Bicycles and accessories (including child seats for bicycles)
- Toys not covered by the Toys Directive
- Wheeled means of transport for children and articles for babies and toddlers

Annex to the accreditation certificate D-ZE-11321-01-00

- Watercraft not covered by the Recreational Craft Directive
- Sports and leisure products
- Child-resistant cigarette lighters
- Scaffolds, ladders, steps
- non-energised tools
- Furniture
- Pedestrian propelled manual and semi-manual trucks without passenger transport and shopping trolleys
- Motor vehicle accessories
- Storage equipment
- Brackets, fasteners and covers
- Outdoor products
- Mechanical household products
- Fire-fighting products
- Waste containers
- Sales equipment
- Caravans and camper vans
- Partition curtains, satchels, cases and bags
- Gas, liquid and solid fuel-fired appliances not covered by the Gas Appliances Regulations
- Rescue products and protective equipment not covered by the PPE Directive
- Energised tools (electrical and non-electrical)
- Products for gardening work
- Industrial robots, safety components, controls
- Lifting equipment, winches, pulling equipment and slings
- Vehicle maintenance, servicing and cleaning equipment
- Air handling products
- Cleaning machines
- Hand-guided snow cutters and blowers
- Walk-in toys
- Movement toys
- Missile toys
- Educational toys (without chemicals)
- Educational toys (with chemicals)
- Model toys and functional toys
- Dolls and textile toys
- Sand toys with sandboxes
- Writing, painting and moulding toys
- Toys with electrical drive; nominal voltage up to 24 volt
- Activity toys for domestic use (indoor and outdoor areas)
- Dressing up toys
- Sports toys
- Entertainment toys

Annex to the accreditation certificate D-ZE-11321-01-00

- Water toys
- Toys for children up to the age of 36 months
- Machinery used in the chemical industry and for the machining and processing of rubber and plastics
- Equipment and machinery for the printing and paper industry
- High-voltage electrical equipment
- Machinery for the electrical and electronics industry
- Equipment and machinery for building
- Equipment and machinery for the timber industry
- Equipment and machinery for agriculture and forestry and horticulture
- Equipment and machinery for the food industry
- Equipment and machinery for the metal industry
- Equipment and machinery for the non-metallic minerals industry
- Equipment and machinery for the textile and leather industry
- Equipment and machinery for civil engineering and road construction
- Equipment and machinery for transport and storage and for the utilities industry
- Equipment and machinery for the packaging industry
- Eye protective equipment
- Equipment for the prevention of drowning¹ and/or for improving buoyancy
- Foot and leg protective equipment and equipment for preventing falls due to slipping
- Full or partial face protective equipment
- Hand and arm protective equipment
- Head protective equipment
- Protective clothing
- Circular saws (single- or multi-blade) for working with wood and material with similar physical characteristics or for working with meat and material with similar physical characteristics
- Hand-fed surface planing machinery for woodworking
- Planing machines for one-sided dressing having a built-in mechanical feed device, with manual loading and/or unloading for woodworking
- Band-saws with manual loading and/or unloading for working with wood and material with similar physical characteristics or for working with meat and material with similar physical characteristics
- Combined machinery for working with wood and material with similar physical characteristics
- Hand-fed tenoning machinery with several tool holders for woodworking
- Hand-fed vertical spindle moulding machinery for working with wood and material with similar physical characteristics

¹ Due to the modified classification of the category according to Regulation (EU) 2016/425, the GS marking will no longer be awarded (from 21.04.2018) for personal protective equipment, which is placed on the market according to Regulation (EU) 2016/425.

Annex to the accreditation certificate D-ZE-11321-01-00

- Portable chainsaws for woodworking
- Presses, including press-brakes, for the cold-working of metals with manual loading and/or unloading, whose movable working parts may have a travel exceeding 6 mm and a speed exceeding 30 mm/s
- Injection or compression plastics-moulding machinery with manual loading or unloading
- Injection or compression rubber-moulding machinery with manual loading or unloading
- Manually loaded trucks for the collection of household refuse incorporating a compression mechanism
- Vehicle servicing lifts
- Devices for the lifting of persons or of persons and goods involving a hazard of falling from a vertical height of more than 3 m
- Protective devices designed to detect the presence of persons
- Power-operated interlocking movable guards designed to be used as safeguards in machinery
- Logic units to ensure safety functions

The certification body fulfils the requirements according to §23 Para. 2 of the German Product Safety Act.

III. TÜV SÜD certification schemes for voluntary conformity assessment for the procedures and products listed in the following

**3.1 TÜV SÜD Mark Voluntary conformity assessment for (M, F, G)
Rev. 5, 18.12.2017 Marking of products with the "TÜV SÜD Mark"**

Conformity assessment in accordance with the requirements described in the TÜV SÜD Mark certification scheme for the award of a certificate, which allows the use of a TÜV SÜD Mark. This certification scheme can be applied for the following products:

- Ladders, steps and loft ladders
- Work platforms as well as work and protective scaffolds
- Prefabricated accessories for roofing
- Storage and transport equipment as well as storage equipment (rack structures)
- Mobile and stationary waste containers
- Shopping trolleys and accessory equipment
- Lifting, loading and conveying equipment and industrial trucks and equipment
- Contaminant tests on the materials of products, e.g. AfPS GS 2014:01 PAH
- Products for cleaning surfaces or removing scratches
- Furniture
- Extractors/exhaust ventilators and fume extractors for laboratories
- Sanitary tapware and accessories, e.g. shower hoses and mixing valves

Annex to the accreditation certificate D-ZE-11321-01-00

- Sanitary appliances, e.g. whirlpool baths, shower partitions and shower cubicles
- Gardening and forestry equipment as well as agricultural and forestry machinery
- Software and application programs in accordance with the following standards:

DIN EN ISO 9241-110:2008-09	Ergonomics of human-system interaction - Part 110: Dialogue principles
ISO/IEC 25010:2011-03	Systems and software engineering - Systems and software Quality Requirements and Evaluation (SQuaRE) - System and software quality models
ISO/IEC 25051:2014-02	Software engineering - Systems and software Quality Requirements and Evaluation (SQuaRE) - Requirements for quality of Ready to Use Software Product (RUSP) and instructions for testing
- Boats and accessories, e.g. inflatable boats, paddles or oars
- Toys
- Seats and carry cots for babies and toddlers, e.g. carry cots and stands
- Child care articles, e.g. soothers, soother holders, cutlery and feeding utensils
- Conveyances for babies and toddlers, e.g. baby carriers, prams and child seats for bicycles
- Dedicated liquefied petroleum gas appliances and accessories; e.g. barbecues, gas welding or soldering equipment
- Personal protective equipment
- Leisure and camping articles and awnings, pavilions and caravan awnings
- Cigarette lighters and appliances, solid fuels and firelighters for barbecuing
- Playground equipment and surfacing
- Preparing technical documentation
- Car accessories, e.g. snow chains, roof and boot racks and load restraint assemblies
- Sports equipment
- Bicycles and accessories
- Pet supplies products
- Electricity generators, storage batteries, transformers and uninterruptible power supply systems
- Tools and machines
- Secondary cells and batteries, transformers and power supply units
- Electrical equipment of electric road vehicles
- Mechanical and electrical household and gardening tools and appliances for similar purposes
- Accessory products for installation in buildings and similar fixed electrical installations
- Automatic door systems
- Luminaires and light sources/lamps
- Instrumentation and control and laboratory equipment and switches for appliances
- Systems and devices with laser equipment

Annex to the accreditation certificate D-ZE-11321-01-00

- Information technology equipment
- Audio, video and similar electronic products and accessories
- Performance tests on consumer products
- Survival training dummies
- Entrance systems, barrier equipment and checkout barriers
- Degrees of protection provided by enclosures (IP code)
- Equipment with food contact in accordance with NSF/ANSI2:2014, NSF/ANSI4:2016 and NSF/ANSI7:2009
- Testing and assessment of functional safety for the above-named electrical and mechanical products

3.2	ETICS/ENEC Scheme Certification scheme Rev. 5, 18.12.2017	Voluntary conformity assessment in accordance with the requirements of the ENEC scheme of European Testing Inspection Certification System (ETICS)	(G)
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Conformity assessment in accordance with ENEC 302 “Rules of Procedure for the ENEC Certification Scheme operating within the ECS” and corresponding documents for the following products:

- Household and similar equipment (HOUS)
- Lighting (LITE)
- IT and office equipment (OFF)

3.3	IECEE/CB Scheme Certification scheme Rev. 5, 18.12.2017	Voluntary conformity assessment in accordance with the requirements of the CB scheme of the IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE)	(M, F, G)
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Conformity assessment in accordance with IECEE 02 “Rules of Procedure – CB Scheme” and corresponding documents for the following product categories:

- Batteries (BATT)
- Switches for appliances and automatic controls for electrical household appliances (CONT)
- Energy Efficiency (E3)
- Electrical Vehicle (ELVH)
- Household and similar equipment (HOUS)
- Hazardous Substances (HSTS)
- Installation accessories and connection devices (INST)
- Lighting (LITE)
- Measurement, control and laboratory equipment (MEAS)

Annex to the accreditation certificate D-ZE-11321-01-00

- Miscellaneous (MISC)
- IT and office equipment (OFF)
- Portable tools (TOOL)
- Electronics, entertainment (TRON)

**3.4 Photovoltaics and grid integration certification scheme
Rev. 5, 18.12.2017** **Voluntary conformity assessment for issue of a type certificate** **(M)**

Conformity assessment for

- Generation units
- Generation plants
- Photovoltaics products and systems

Based on the following standards:

IEC 62109-1	Safety of power converters for use in photovoltaic power systems - Part 1: General requirements
EN 62109-1	Safety of power converters for use in photovoltaic power systems - Part 1: General requirements
DIN EN 62109-1 (VDE 0126-14-1)	Safety of power converters for use in photovoltaic power systems - Part 1: General requirements
IEC 62109-2	Safety of power converter for use in photovoltaic power systems Part 2: Particular requirements for inverters
EN 62109-2	Safety of power converter for use in photovoltaic power systems Part 2: Particular requirements for inverters
DIN EN 62109-2 (VDE 0126-14-2)	Safety of power converters for use in photovoltaic power systems – Part 2: Particular requirements for inverters
DIN V VDE V 0126-1-1 (VDE V 0126-1-1)	Automatic disconnection device between a generator and the public low-voltage grid
VDE-AR-N 4105	Generators connected to the low-voltage distribution network. Technical requirements for the connection to and parallel operation with low-voltage distribution networks

Annex to the accreditation certificate D-ZE-11321-01-00

DIN V VDE V 0124-100 (VDE V 0124-100)	Grid integration of generator plants - Low-voltage - Test requirements for generator units to be connected to and operated in parallel with low-voltage distribution network
IEC 62116	Test procedure of islanding prevention measures for utility-interconnected photovoltaic inverters
EN 62116	Test procedure of islanding prevention measures for utility-interconnected photovoltaic inverters
DIN EN 62116 (VDE 0126-2)	Utility-interconnected photovoltaic inverters. Test procedure of islanding prevention measures
IEC 61727	Photovoltaic (PV) systems - Characteristics of the utility interface
EN 61727	Photovoltaic (PV) systems - Characteristics of the utility interface
DIN EN 61727	Photovoltaic (PV) systems. Characteristics of the utility interface
EN 50438	Requirements for the connection of micro-generators in parallel with public low-voltage distribution networks
DIN EN 50438 (VDE 0435-901)	Requirements for micro-generating plants to be connected in parallel with public low-voltage distribution networks
DIN EN 61215	Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval
EN 61215	Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval
IEC 61215	Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval
DIN EN 61646	Thin-film terrestrial photovoltaic (PV) modules - Design qualification and type approval
EN 61646	Thin-film terrestrial photovoltaic (PV) modules - Design qualification and type approval
IEC 61646	Thin-film terrestrial photovoltaic (PV) modules - Design qualification and type approval

Annex to the accreditation certificate D-ZE-11321-01-00

DIN EN 61730-1	Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction
EN 61730-1	Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction
IEC 61730-1	Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction
DIN EN 61730-2	Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing
EN 61730-2	Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing
IEC 61730-2	Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing
IEC 62108	Concentrator photovoltaic (CPV) modules and assemblies – Design qualification and type approval
DIN EN 50548	Junction boxes for photovoltaic modules
VDE 0126-5	Junction boxes for photovoltaic modules
DIN V VDE V 0126-5	Junction boxes for photovoltaic modules
EN 50548	Junction boxes for photovoltaic modules
VDE-AR-E 2283-4	Requirements for cables for PV systems
AK 411.2.3_2008-0001	Requirements for cables for PV systems
DIN EN 50521	Connectors for photovoltaic systems - Safety requirements and tests
EN 50521	Connectors for photovoltaic systems - Safety requirements and tests
VDE 0126-3	Connectors for photovoltaic systems - Safety requirements and tests
G83/1-1	Recommendations for the Connection of Small-scale Embedded Generators (Up to 16A per Phase) in Parallel with Public Low-voltage Distribution Networks

Annex to the accreditation certificate D-ZE-11321-01-00

G59/2-1	Recommendations for the Connection of Generating Plant To The Distribution Systems of Licensed Distribution Network Operators
AS 4777.2	Grid connection of energy systems via inverters part 2: inverter requirements
AS 4777.3	Grid connection of energy systems via inverters part 3: grid protection requirements
C10/11	Specific technical requirements for distributed plants operating in parallel on the distribution network
DIN V VDE 0126-1-1: 2006-02+A1 2012-02	Automatic disconnection device between a generator and the public low-voltage grid
DIN V VDE 0126-1-1: 2013-08	Automatic disconnection device between a generator and the public low-voltage grid
IEC 61727 2004	Photovoltaic (PV) systems - Characteristics of the utility interface
EN 50438 2013	Requirements for the connection of micro-generators in parallel with public low-voltage distribution networks
IEC 60146-1-1 2009	Semiconductor converters - General requirements and line commutated converters - Part 1-1: Specification of basic requirements
ER G83/2	Recommendations for the Connection of Type Tested Small-scale Embedded Generators (Up to 16A per Phase) in Parallel with Low-Voltage Distribution Systems
CEI 0-16 09-2014 CEI 0-16 V1 12-2014 CEI 0-16 V2: 07-2016	Reference technical rules for the connection of active and passive consumers to the HV and MV electrical networks of distribution Company
CEI 0-21 2016	Reference technical rules for the connection of active and passive users to the LV electrical Utilities
AS/NZS 3100 2009 +A1 2010 +A2 2012	Approval and test specification - General requirements for electrical equipment
CER/06/190	Ireland: Arrangements for Micro Generation Consultation Paper

Annex to the accreditation certificate D-ZE-11321-01-00

RD 1663	Spanish: Real Decreto 1663/2000, Connection of photovoltaic system to the low-voltage grid network
RD 1699	Spanish: Real Decreto 1699/2011, the connection of generation system for electric energy with small power
RD 661	Spanish: Real Decreto 661/2007, About the generation of electric energy
ÖNORM E 8001-4-712	Austria: Erection of electrical installations with rated voltages up to AC 1000 V and DC 1500 V – Part 4-712: Photovoltaic power-systems – Erection and safety requirements systems
Technical Regulation 3.2.1:2011	Denmark: electricity generation facilities with a rated current of 16 A per phase or lower
UTE C 15-712-1	France: LOW-VOLTAGE ELECTRICAL INSTALLATIONS: Photovoltaic installations connected to the public distribution network
UL 1741	Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources
IEEE 1547	IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems
IEEE 1547.1	IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems
BDEW:2008+Supplement 1/2009, 7/2010, 2/2011, 1/2013	Technical Guideline Generating Plants Connected to the Medium- Voltage Network Guideline for generating plants' connection to and parallel operation with the medium-voltage network
FGW TR3 Rev.24	Technical Guidelines for Power Generating Units Part 3 Determination of electrical characteristics of power generating units connected to MV, HV and EHV grids
FGW TR4 Rev.8	Technical Guidelines for Power Generating Units Part 4 Demands on Modelling and Validating Simulation Models of the Electrical Characteristics of Power Generating Units and Systems
FGW TR8 Rev.7	Technical Guidelines for Power Generating Units Part 8 Certification of the electrical characteristics of power generating units and systems in the medium-, high- and highest-voltage grids

Annex to the accreditation certificate D-ZE-11321-01-00

IEC 62477-1:2012-07 EN 62477-1:2012	Safety requirements for power electronic converter systems and equipment – Part 1: General
E DIN VDE V 0124-100 2013-10	Grid integration of generator plants – Low-voltage – Test requirements for generator units to be connected to and operated in parallel with low-voltage distribution networks
NRS 097-2-1 2017	Grid interconnection of embedded generation
ER G59/3 2013	Recommendations for the connection of generating plant to the distribution systems of licensed distribution network operators
VDE-AR-N 4120 2015-01	Technical requirements for the connection and operation of customer installations to the high voltage network (TAB high voltage)
E VDE-AR-N 4110 2017-03	Technical requirements for the connection and operation of customer installations to the medium voltage network (TAR medium voltage)
VDE-AR-E 2510-50 2017-05	Stationary battery energy storage systems with lithium batteries - safety requirements
VDE-AR-E 2510-2 2015-09	Stationary electrical energy storage systems intended for connection to the low voltage grid
E VDE-AR-N 4100 2017-05	Technical requirements for the connection and operation of customer installations to the low-voltage network
FNN Note 2016-10	Connection and operation of accumulators in the low-voltage network
Technical Regulation 3.3.1 2017-06	Denmark: Technical requirement for battery generation
CLC/TS 50549-1 2015-01	Requirements for generating plants to be connected in parallel with distribution networks - Part 1: Connection to a LV distribution network above 16 A
CLC/TS 50549-2 2015-01	Requirements for generating plants to be connected in parallel with distribution networks - Part 2: Connection to a MV distribution network
ABNT NBR 16149 2013-03	Photovoltaic (PV) systems – Characteristics of the utility interface
ABNT NBR 16150 2013-03	Photovoltaic (PV) systems – Characteristics of the utility interface – Conformity test procedure

Annex to the accreditation certificate D-ZE-11321-01-00

UNE 206006 2011	Performance tests for islanding detection of multiple grid-connected photovoltaic inverters in parallel
UNE 206007-1 2013	Requirements for connecting to the power system. Part1: Grid-connected inverters
IEC TS 62941 2016	Terrestrial photovoltaic (PV) modules - Guideline for increased confidence in PV module design qualification and type approval

3.5	Functional safety certification scheme Rev. 5, 30.01.2018	Functional safety and Functional safety for railway applications	(M)
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Functional safety certification for

- Actuators,
- Operating systems,
- Controllers,
- Development tools,
- Semi-conductors,
- Communication protocols,
- Programmable control units,
- Sensors and mechanical sensors/actuators

Based on the following standards:

DIN EN 61508-1 2011-02	Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 1: General requirements
DIN EN 61508-2 2011-02	Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems
DIN EN 61508-3 2011-02	Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 3: Software requirements

Annex to the accreditation certificate D-ZE-11321-01-00

Functional safety certification for railway applications for

- rail vehicles for command/control equipment and on-board train protection
- fixed installations for signalling systems and equipment for train and/or route protection

based on the following standards:

DIN EN 50126 VDE 0115-103 2000-03	Railway applications - Specification and demonstration of reliability, availability, maintainability and safety (RAMS)
DIN EN 50126 Corrigendum 1 2006-09 VDE 0115-103 Corrigendum 1 2006-09	Railway applications -Specification and demonstration of reliability, availability, maintainability and safety
DIN EN 50128 2012-03	Railway applications - Communication, signalling and processing systems - Software for railway control and protection systems
DIN EN 50128 Corrigendum 1 2014-09 VDE 0831-128 Corrigendum 1 2014-09	Railway applications - Communication, signalling and processing systems - Software for railway control and protection systems
DIN EN 50129 2003-12	Railway applications - Communication, signalling and processing systems - Safety related electronic systems for signalling
DIN EN 50129 2017-07 VDE 0831-129 2017-07	Railway applications - Communication, signalling and processing systems - Safety related electronic systems for signalling
DIN EN 50159 2011-04 VDE 0831-159 2011-04	Railway applications - Communication, signalling and processing systems - Safety-related communication in transmission systems
IEC 62278 2002-09	Railway applications - Specification and demonstration of reliability, availability, maintainability and safety (RAMS)

Annex to the accreditation certificate D-ZE-11321-01-00

IEC 62279 2002-09	Railway applications - Communications, signaling and processing systems - Software for railway control and protection systems
IEC 62279 2015	Railway applications - Communication, signaling and processing systems - Software for railway control and protection systems
IEC 62425 2007-09	Railway applications - Communication, signaling and processing systems - Safety related electronic systems for signalling
IEC 62280 2014-02	Railway applications - Communication, signaling and processing systems - Safety related communication in transmission systems

3.6 Monitoring and alarm receiving Centres certification scheme Rev. 5, 18.12.2017	Certification scheme for monitoring and alarm receiving centres, Voluntary conformity assessment	(M)
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Based on the following standards

DIN EN 50518-1 VDE 0830-5-6-1 2014-10	Monitoring and alarm receiving centre – Part 1: Location and construction requirements
DIN EN 50518-2 + AC VDE 0830-5-6-2 Corrigendum 2014-10	Monitoring and alarm receiving centre – Part 2: Technical requirements
DIN EN 50518-3 VDE 0830-5-6-3 2014-10	Monitoring and alarm receiving centre – Part 3: Procedures and requirements for operation

IV. Certification of fire detection and alarm systems (system for the assessment and verification of constancy of performance 1) within the scope of Regulation No. 305/2011 laying down harmonised conditions for the marketing of construction products (Construction Products Regulation) (M)

Decision / Commission decision	System ¹⁾	Technical specification
1996/577/EC 2002/592/EC Fire alarm / Fire detection system, fixed fire-fighting systems, fire protection and smoke control systems and explosion protection products	1	EN 54-4+A2:2006 Fire detection and fire alarm systems - Part 4: Power supply equipment
		EN 54-16:2008 Fire detection and fire alarm systems - Part 16: Voice alarm control and indicating equipment

¹⁾ for assessment and verification of constancy of performance

The requirements according to Article 43 of the Construction Products Regulation for a certification body for products according to Annex V of the Construction Products Regulation are fulfilled. Tasks, which are required for the certification and are not performed by the certificate holder themselves, are included in the list of the subcontractors.

Abbreviations used:

AK xxx	Anwendungsregel, Arbeitskreis des VDE (Application rule, VDE workgroup)
AS	Australian Standard
ETICS	European Testing Inspection Certification System
IEC	International Electrotechnical Commission
IECEE	IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components
ISO	International Standards Organisation
ITC	QM document of TÜV SÜD Product Service GmbH
GS	Tested safety
VDE-AR-Nxxx	Application rule of the VDE