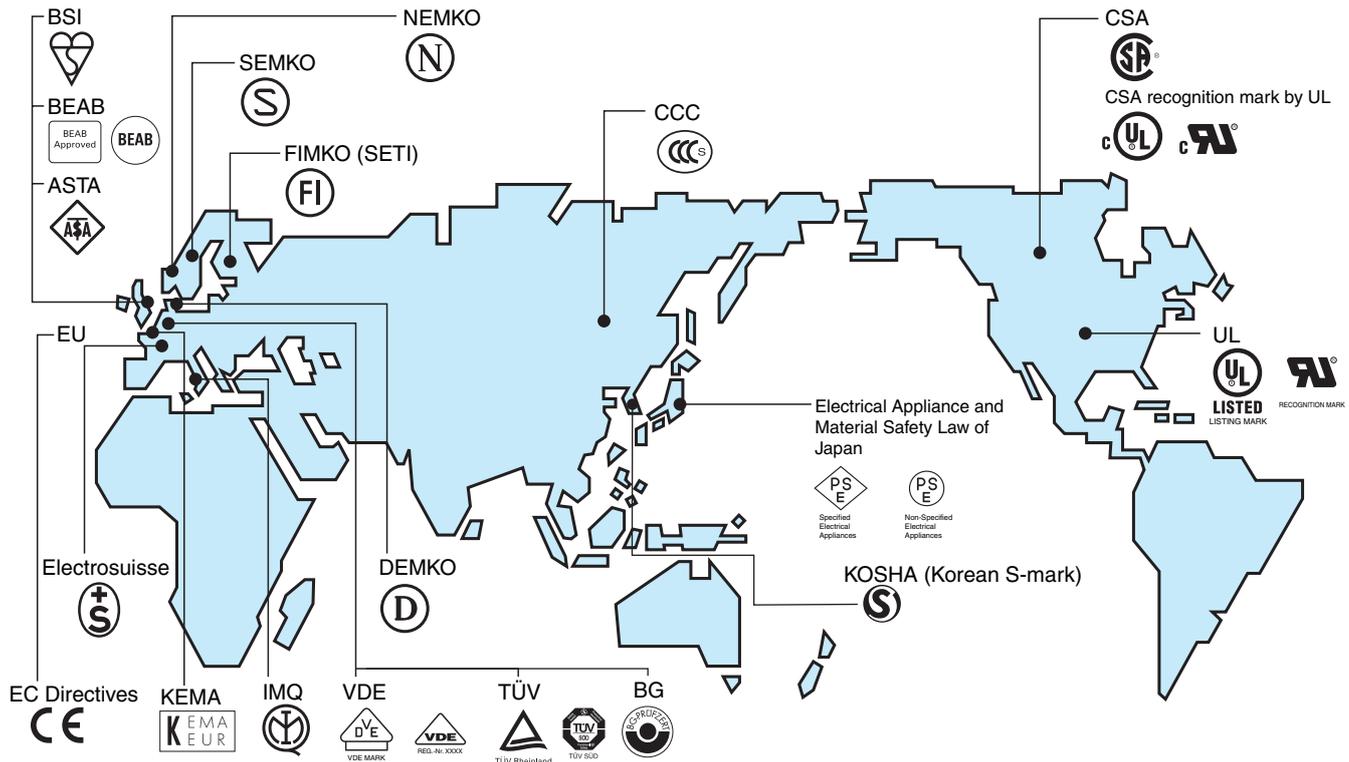


# Standards

## National Standards



### International Standards

International standards consist of the IEC standards related to electricity and the ISO standards related to other areas (e.g., machines and management.)

#### IEC (International Electrotechnical Commission)

- The IEC is a standardization commission founded in 1908 to promote unification and coordination of international standards relating to electricity. It is headquartered in Geneva, Switzerland.
- Based on reports from member nations on the latest science technologies in those nations, IEC standards are issued as technological standards relating to electricity. Established international safety standards provided by various countries and accepted worldwide are based on IEC standards.
- The IEC standards committees includes the CISPR (International Special Committee on Radio Interference) that makes standards for EMC (Electromagnetic Compatibility).
- To simplify certification procedures for electrical devices and promote smooth international trade, there is an international scheme called CB Scheme (Certification Body Scheme), which is authorized by IEC standards. Based on the CB Scheme, safety tests on electrical devices are conducted and certificates are issued if the devices are proved to meet IEC standards.

#### ISO (International Organization for Standardization)

ISO is a standardization organization that started official activities in 1947 to promote international standards in all areas (e.g., machines and management) except for electricity, which is covered by the IEC, by issuing ISO standards. It is headquartered in Geneva, Switzerland.

### North America

#### UL Standards (Underwriters Laboratories INC.)



- A nonprofit organization established in 1894 by the American association of fire insurance companies. Underwriters Laboratories (abbreviated to UL hereafter) conducts certification testing on all kinds of electrical products. In many U.S. cities and states, UL certification is legally required on all electrical items sold. To obtain UL certification on an electrical product, all major internal components also require UL certification.
- UL offers two classifications of certification, the listing mark and the recognition mark. A Listing Mark constitutes the entire certification of a product. Products display the Listing Mark shown below.

The Recognition Mark applies to the components used in a product, and therefore constitutes a more conditional approval of a product. Use of the Recognition Mark is not required for non-specified parts (e.g., specified parts such as microswitches) Products display the Recognition Mark shown below.

Since October 1992, UL has been recognized as a CO (council organization) and TO (test organization) by the SCC (Standard Council of Canada). This authorizes UL to conduct safety tests and certify products conforming to Canadian standards. The above marks are UL marks for products certifying that the products meet Canadian standards.

	Marks for US	Marks for Canada	Marks for US and Canada
LISTING MARKS			
RECOGNITION MARKS			

#### CSA Standards (Canadian Standards Association)

- This association descended from a nonprofit, non-government standardization organization established in 1919. In addition to industrial standardization, the association now carries out safety testing on electrical products. Standard development: The Canadian Standards Association Product testing and certification: CSA International This process is known as "certification," and consequently, CSA-certified equipment displays the mark shown below.

## Europe

## EN (European Norm) Standards

- Of the EN standards related to electricity, standards beginning with "EN6" are based on IEC standards and those beginning with "EN55" are based on IEC-CISPR standards. Standards beginning with "EN5" are unique EU standards that do not exist in the IEC standards.
- The following marks of recognition are used by the Certification Bodies in European countries in accordance with EN standards.



**VDE** (Verband Deutscher Electrotechnischer e.V.)  
Germany



**TÜV** (Technischer Überwachungs Verein e.V.)  
Rheinland  
Germany



**TÜV** (Technischer Überwachungs Verein e.V.) SÜD  
Germany



**BG** (Berufsgenossenschaften)  
Germany



**DEMKO** (Danmarks Elektriske Materielkontrol)  
Denmark



**NEMKO** (Norges Elektriske Materielkontrol)  
Norway



**FIMKO** (Finlands Material Kontroll)  
Finland



**BSI** (British Standards Institution)  
United Kingdom (applicable to industrial products)



**BEAB** (British Electrotechnical Approvals Board)  
United Kingdom (applicable to home electronics products)



**ASTA** (ASTA Certification Services)  
United Kingdom (applicable to general products)  
**Note:** BEAB and ASTA were combined as of January 2004 to become ASTA BEAB Certification Services.



**KEMA** (Keuring van Electrotechnische Materialen  
Nederland B. V.)  
The Netherlands



**IMQ** (Istituto Italiano del Marchio di Qualita)  
Italy



**SEMKO** (Svenska Elektriska Materielkontroll  
Anstalten)  
Sweden



**Electrosuisse** (Previously SEV)  
Switzerland

## EC (European Communities) Directives

- In the EU (European Union), EC Directives are announced to instruct the creation of laws in the EU member countries. A product can display the CE Marking only when it conforms to all of the directives applicable to it, such as the New Approach Directives, which cover the Machinery Directive, Low Voltage Directive, and the EMC Directive.
- As a rule, EN standards announced as Harmonized Standards in the Official Journal of the European Communities are used to evaluate directive compliance.



## China

## CCC (China Compulsory Certification) Mark



CCC mark

- As a result of China joining the WTO (World Trade Organization) in 2001, the previous Safety License System for Import Commodities and the Compulsory Supervision System for Product Safety Certification were combined to form the CCC. The change was announced on 3 December 2001 and implemented from 1 May 2002. Starting 1 August 2003, any products that have not received the CCC Mark are prohibited from import to or sale in China.

Products Subject to CCC Mark: 19 product sections consisting of 132 product categories

Applicable Standards: National Standards (GB: Guojia Biaozhun) (Standards related to electricity were based on IEC standards.)

CCC Mark: Display of the CCC Mark is legally required.

## Korea

## KOSHA (Korean Occupational Safety and Health Agency) S Mark Safety Certification System

(Korean S-mark)



S mark

The KOSHA S Mark Safety Certification System is based on Article 34-2 or Article 34 (2) of Korea's Industrial Safety and Health Law (ISHL). The purpose of the system is to improve safety and quality by awarding the S mark for safety certification to products that have been objectively recognized as safe. This process is performed by comprehensively

inspecting the safety and reliability of products that are used in industry as well as the manufacturer's quality control capabilities.

The S mark for safety certification is a voluntary certification system that was established by the Korean Occupational Safety and Health Agency in November 1997 with the purpose of reducing occupational accidents. The certification mark is issued by KOSHA to products that it inspects and determines to meet the criteria.

## Shipping Standards

There are more than 20 classification societies worldwide that individually work to create regulations and certify compliance. The IACS (International Association of Classification Societies) works as an international body currently consisting of 10 member classification societies plus 2 associate classification societies. The classification societies in the IACS certify and register 90% of the world's ships. The option to be classified is made by the owner of the ship; classification certification is undertaken by the shipyard at the request of the owner.

Classification certification has a close relationship to maritime insurance. Insurance underwriters will as a rule insure only ships that have been classified and refuse those without a certified classification. Therefore, automation devices used on ships must conform to classification standards of individual countries if so requested by the owner.

Although classification societies will often recognize portions of inspection data that have the same requirement from other classification societies, requirements and standards differ among the classification societies. Classification societies therefore they do not recognize certification from other classification societies. It is thus necessary to comply with the classification standards of the required classification society. If registration is required in more than one classification, then certification is required for both.

## IACS Member Classification Societies

- ABS: American Bureau of Shipping
- BV: Bureau Veritas (France's classification society)
- CCS: China Classification Society
- DNV: Det Norske Veritas (Norway's classification society)
- GL: Germanischer Lloyd (Germany's classification society)
- KR: Korean Register of Shipping
- LR: Lloyd's Register of Shipping (Britain's classification society)
- NK: Nippon Kaiji Kyokai (Japan's classification society)
- RINA: Registro Italiano Navale (Italy's classification society)
- RS: Russian Maritime Register of Shipping

## IACS Associate Classification Societies

- IRS: Indian Register of Shipping

## Other Classification Societies

- CR: China Corporation Register of Shipping (Taiwan's classification society)

## Japan

## Electrical Appliance and Material Safety Law of Japan



Specified Electrical Appliances



Non-Specified Electrical Appliances

Accompanying revisions to laws related to electrical appliances, the Electrical Appliance and Material Safety Law was switched to on 1 April 2001 and the previous Electrical Appliance and Material Control Law was abolished. New marks were also created for the Electrical Appliance and Material Safety Law. The law covers 112 specified electrical appliances and materials and 340 non-specified electrical appliances and materials. Article 2 of the Ordinance Concerning Technical Requirements for Electrical Appliances and Materials specifies technical requirements (IEC-J standards) harmonized with IEC standards.