

# Outline of Principal Standards and Certifications

## International Standards

### ISO

(International Organization for Standardization)

ISO is a successor to ISA (International Federation of the National Standardizing Associations) that was founded in 1926. In 1942, the activities of this organization were interrupted by World War II, but UNSCC (United Nations Standards Coordinating Committee) took over the operations as a provisional organization. UNSCC held a meeting in London to decide promotion of international harmonization and coordination of industrial standards in 1946. ISO was established as a new organization in 1947. This organization locates its central secretariat at Geneva, Switzerland, taking charge of international standardization in non-electrical and non-electronics fields to establish and issue ISO standards.

### IEC

(International Electrotechnical Commission)

IEC was established in 1906. The central secretariat was moved in 1948 from London to Geneva, Switzerland, or a current location. This organization establishes and issues IEC standards, taking charge of international standardization in electrical and electronics fields.

## Regional Standards

### Europe:

#### EN (European Norm)

EN means harmonized European standards certificated by CEN (Comité Européen de Normalisation) and CENELEC (Comité Européen de Normalisation Electrotechnique). Member countries are obliged to implement the EN Standards by designating the EN standards as the national standards of each country.

When new EN standards are established, member countries in the relevant area must replace the corresponding domestic standards with the new EN standards. EN standards are also used as harmonized standards to comply with each European Directive published in a European official gazette (Official Journal of the European Communities).

Once the IEC and ISO international standards are established, member countries are obliged to comply with the requirements of these standards when each country issues or revises the domestic standards, based on agreements of WTO (World Trade Organization) and TBT (Technical Barriers to Trade). As a result, in principle, EN (European Norm) and JIS standards shall conform to the IEC and ISO standards.

## National Standards

### JAPAN:

#### JIS (Japanese Industrial Standards)

JIS means Japanese national standards based on Industrial Standardization Law. JIS standards shall undergo examination of JISC (Japanese Industrial Standards Committee) that was established under Industrial Standardization Law, and shall be issued, revised, checked, and abolished by the Minister in charge. JIS standards apply to development, production, distribution, and use of industrial products, except for food and agricultural/forestry products.

### Germany:

#### DIN Standards

DIN means German standards issued by DIN (Deutsches Institute für Normung). DIN standards are expressed as "Deutsche Normen" (German standards). DIN standards are widely applied as comprehensive standards for all industrial fields, as well as fundamental standards. DIN standards have considerable influence on other standards such as ISO, IEC, and EN.

### United Kingdom:

#### BS (British Standards)

BS means British national standards issued by BSI (British Standards Institution).

BSI issues BS standards as the national standards that adopt EN standards. At present, BS directly adopts ISO and IEC standards, and many standards are issued as BS/ISO and BS/IEC standards. BS standards are considerably popular in various areas in the world. In Japan, BS standards are widely applied as well as DIN standards.

BS standards are applied as a basis for machine safety/management system standards.

### United States of America:

#### ANSI Standards

ANSI standards are U.S. national standard certificated by ANSI (American National Standards Institute). ANSI certifies the standards that have been voluntarily prepared by relevant academic organizations, industrial associations, and other standardizing organizations in individual fields such as construction, machinery, electrical, electronics, medical, computer, space, atomic energy, and so on, and issues these standards as the U.S. national standards.

Recently, for example, for standardization of industrial robots that have been rapidly increased in their usage, ANSI issued ANSI/RIA15.06, as the standard related to "Safety requirements for industrial robots and robot systems" that RIA (Robotic Industries Association) has prepared.

### Canada:

#### CAN (National Standards of Canada)

CAN means Canadian national standards established by SCC (Standards Council of Canada).

SCC does not prepare standards internally, and entrusts the following four organizations to prepare standards:

- Canadian Standards Association (CSA)
- Canadian General Standard Board (CGSB)
- Underwriters' Laboratories of Canada (ULC)
- Bureau de Normalisation du Québec (BNQ)

### China:

#### GB (Guojia Biaozhun)

GB means Chinese national standards established by SACS (State Administration of China for Standardization).

SACS establishes standards related to national economy and technologies. GB standards are compulsory standards, claiming 70% of the total standards.

According to "Management rules for standards of industrial and agricultural products, processes, and construction technologies," all production, construction, and management sections and companies are obliged to comply with all requirements of the GB national standards. Furthermore, they must comply with all technical standards for inspections and tests. GB standards are classified into GB as compulsory standards, and GB/T as voluntary (non-compulsory) standards.

### Australia:

#### AS (Australian Standards)

AS standards are issued by SAI (Standards Australia International Ltd.), and legislated and established by the federal governments as the national standards.

The government of each state uses these standards to conduct certification in the state.

SAI also issues AS/NZS standards as joint standards with New Zealand, and AS ISO standards that adopt ISO standards.

## Industrial Standards

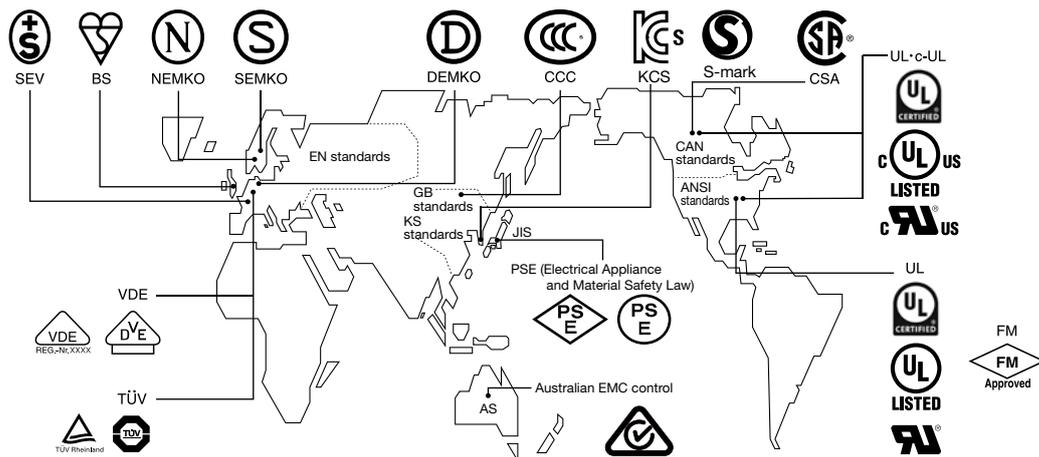
### SEMI

(Semiconductor Equipment and Materials International)

SEMI locates the main office in U.S., and subsidiary offices in Europe, Japan, Korea, and other countries.

This organization issues SEMI standards related to gas, process chemical, manufacturing equipment (hardware and software), system and safety, micro-lithography (micro-patterning), packaging, materials, traceability, and flat panel display (FPD).

# Outline of Principal Standards and Certifications



## Europe

### About the CE marking

The CE marking has been obliged for machinery products to be exported to EU (European Union) countries based on Machinery Directives since January 1, 1995. Furthermore, the CE marking has been obliged for all relevant electric equipment and electronic equipment based on EMC Directives since January 1, 1996, and based on Low Voltage Directives since January 1, 1997.

If customers use IDEC products that attained EN certification, the customers' machinery products and equipment for shipment to Europe can improve conformity with the CE Marking.

#### -About European safety standards-

Through integration of EC, EN (European Norm) was established by CEN (Comité Européen de Normalisation) and CENELEC (Comité Européenne Normalisation Electrotechnique) as harmonized safety standards for EU countries. Particularly, CENELEC takes charge of preparation of EN standards related to electric technologies.

EN standards are adopted by twenty five EU countries and four EFTA countries.

Each member country is obliged to adopt EN standards as the domestic standards of each country. Also, each country must abolish domestic standards that do not conform to EN standards.



#### ◆ Description on the CE marking

The CE marking is the mark to indicate that the products with the CE marking conform to the requirements of relevant EC Directives (European Council Directives). In most cases, EN standards are adopted to the requirements. Free distributions in EU areas are assured to the products with the CE marking.

#### ◆ How to obtain certification of compliance with EC Directives

To comply with EC Directives, the product must comply with EN standards. The exporter can file an application for certification of compliance with EC Directives to EU-authorized institutions such as TÜV and DEMKO.

#### ◆ EC Directives related to product safety

Among EC Directives related to product safety, major directives related to control equipment are as follows:

#### Machine Directives

The CE marking has been obliged for all machines with movable parts since January 1, 1995. Related standards are EN292-1/-2 (Machine Safety), EN 60204-1 (Electric Equipment of Industrial Machinery), and so on.

**ATEX Directive** (Electrical and mechanical equipment for use in explosive atmospheres)

As of July 2003, CE marking is required on equipment to be used in explosive atmospheres.

**EMC Directives** (Electromagnetic compatibility directive)

EMC Directives are related to electromagnetic interference. The CE marking has been obliged for electric and electronics products that are easily affected by electromagnetic wave, or easily cause electromagnetic interference, since January 1, 1996.

Related standards include:

EN55011 (Emission standard for industrial, scientific and medical equipment)

EN55022 (Emission standard for office and information equipment)

EN61000-6-4 (Common emission standard for industrial environment)

EN61000-6-2 (Common immunity standard for industrial environment)

#### Low Voltage Directives

Low Voltage Directives are related to electric equipment that use drive power supply voltage of 50 to 1000V AC or 75 to 1500V DC. The CE marking has been obliged for the above electric equipment since January 1, 1997. Related standards include:

EN60947-1 (General standard for low-voltage switching control equipment)

EN60947-5-1 (Control circuit equipment and switching element)

EN61131-2 (Programmable Logic Controllers)

EN60950-1 (Safety of information processing equipment)



(TÜV SÜD)



(TÜV Rheinland)



(House Mark)



(Register Mark)

### TÜV (Germany)

(Technischer Überwachungs-Verein)

TÜV is the largest independent civil technical inspection institution in Germany.

This institution takes charge of examinations of electric equipment, machinery, automobiles, medical equipment, sports apparatuses, toys, boilers, and other various products to issue certification of these products about conformity with relevant safety standards.

Also, TÜV is an EU-authorized institution for certification of compliance with Machinery Directives, Low Voltage Directives, and EMC Directives.

The TÜV offices are located in fourteen places in Germany. Each office name is expressed by a name of the relevant state after TÜV (e.g. TÜV Rheinland). TÜV SÜD Group is an integrated organization, which is comprised of TÜV Product Service, TÜV Hannover, TÜV Bayern and TÜV Hessen. TÜV also takes charge of examination and certification of quality assurance systems based on ISO9000 (EN29000), and issue of the GS (Geprüfte Sicherheit:= Approved Safety) mark based on German Equipment Safety Act.

### VDE (Germany)

(Verband Deutscher Elektrotechniker e.V.)

VDE is abbreviation of Verband Deutscher Elektrotechniker (association of German electro-technicians). Standards established by this organization are called VDE standards, which mainly define safety requirements related to electricity.

VDE also takes charge of examination and certification to verify safety of electric products based on VDE standards. VDE provides two types of certifications depending on the degree of conformity to relevant VDE standards: One is "Unconditional" certification, which applies to a product that completely satisfies the requirements of relevant VED standards. In this case, "House Mark" is applied to the target product.

Another is "Conditional" certification, which applies to a product that satisfies the requirements for a set product when the target product is incorporated in the set product. In this case, "Register Mark" is applied to the target product.

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## North America



**UL (United States of America)**  
(Underwriters Laboratories Inc.)

UL is a non-commercial test institution, which was established by a U.S. fire insurance company association in 1984. UL defines safety standards for industrial products, and conducts tests according to clients' requests.

For electric products, UL publishes a list (Green Book) of unconditionally certified products (called "LISTING" products) that is mainly applied to set products, and a list (Yellow Book) of conditionally certified products (called "RECOGNITION" products) that is applied to components used in set products.

In the United States, use of UL-certified products is compulsorily demanded based on municipal ordinances of many districts. Therefore, products to be exported to U.S. must attain UL certification.

<c-UL (UL mark for export to Canada)>

The c-UL certificate is based on CSA standards. Products are tested by UL, to attain UL certification.

In principle, products that attained c-UL certification can be accepted in Canadian markets.

The following marks are applied to the products that attained both UL and c-UL certifications.



**FM (United States of America)**

(FM Approvals)

FM is a civil test/certification institution related to fire-retardant and explosion-proof equipment, which was established in 1835. This institution takes charge of preparation and issue of FM standards for certification of the above equipment.

Some FM standards are adopted into the standards of federal government, state government, and each local government.

**CSA (Canada)**

(CSA International)

CSA is abbreviation of Canadian Standards Association. It is a non-commercial standardizing organization established in 1919. CSA defines safety standards for industrial products used in Canada, and conduct tests according to clients' requests.

CSA-certified products are evaluated in the meeting of each state, and it attains a formal CSA Certification Record, if there is no objection.

In most of the states in Canada, CSA certification is compulsorily demanded for sales of electrical products. Therefore, electrical products to be exported to Canada must attain CSA certification.

## Asia/Australia



**Compulsory Certification System of the People's Republic of China**

(China Compulsory Certification)  
China joined the WTO in December 2001, and then regulated and unified the conventional compulsory certification systems. In May 2002, China newly established "Compulsory Product Certification Control Regulations" for products related to human health and safety, life and health of animals and plants, environmental protection, and public safety. Then, after a grace period of one year, these regulations have been compulsorily applied to domestic products in China and products to be imported into China since May 2003.

The products subjected to these control regulations are published in the "list of products under the compulsory certification system of the People's Republic of China" in sequence.

132 items in 19 fields (including electric wires, household electrical appliances, low-voltage equipment, audio/video equipment, information/communication equipment, electric tools, welding machines, vehicles, automotive safety glass, fire-fighting equipment, security equipment, medical equipment, etc.) have already been listed in the first stage. Furthermore, it is expected that more items subjected to these regulations will be added in the future.

To attain certification corresponding to the control item and apply the CCC mark to the target product, CNCA (Certification and Accreditation Administration of the People's Republic of China), or the institution authorized by the Chinese government, must verify that the product conforms to the GB (Guojia Biaozhun) standards, or the Chinese national standards based on the IEC standards, and the factory that manufactured the product has appropriate capacities.



S-mark

**KOSHA (Korea)**

KOSHA (Korea Occupational Safety and Health Agency) started S-mark certification system in November 1997. The S-mark is currently a voluntary certification, but leading Korean semiconductor industry requires the marking when adopting products. Thus the demand for S-mark is expected to increase. KCs mark is a mandatory certification required by KOSHA. Since the revision of March 1, 2013, subjected products imported and sold to Korea are required to have KCs mark.



KCS mark



RCM Mark

**Australian EMC Control**

RCM mark became mandatory after March 2016 in place of C-tick mark. Suppliers need to comply with the EMC standards list issued by ACMA (The Australian Communications and Media Authority). IEC and EN standards can be also applied.