

Our Isolators Are Certified. Are Yours?



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We use electrical gadgets every day, and there are applicable, [high-voltage safety standards](#) for designers to follow to help confirm that the gadgets that they design operate as expected from a safety perspective. TI takes great care to produce components that meet component-level safety requirements of these standards.

Today, electrical equipment manufacturers use [digital isolators](#) for a variety of reasons, including safety and data integrity. If functional (non-safety) insulation is necessary, then the manufacturer's main concern is proper functioning of the equipment. On the other hand, if protecting against potential electric shock hazard is a requirement, many end equipment OEMs use third party, independent regulatory compliance certification approvals including consideration for basic, double or reinforced insulation. Today, many end equipment designers frequently use digital isolators or semiconductor components with integrated isolation to provide the required level of insulation.

Basic insulation helps to provide a minimum level of protection against electric shock. For safety purposes, a supplementary insulation in addition to basic insulation may be required. Insulation comprising both basic and supplementary insulation is called double insulation. Reinforced insulation is a single insulation system which provides a degree of protection against electric shock equivalent to double insulation. Reinforced insulation may comprise several layers that cannot be tested individually as basic insulation or supplementary insulation. Test & Measurement (T&M) equipment and Adjustable Speed Motor Drives are examples of end equipments that may require reinforced insulation.

TI's isolation integrated circuits (ICs) are tested and certified for electrical insulation strength by multiple independent certification laboratories around the world. A typical TI isolation product might have electrical safety approvals bearing investigation and certification from the following five agencies:

- Underwriters Laboratories (UL)
- Canadian Standards Association (CSA)
- Association for Electrical, Electronic and Information Technologies (VDE)
- Technical Inspection Association (TUV)
- China Quality Certification Center (CQC)

UL is headquartered in the United States, while CSA is a Canadian organization. VDE and TUV are based in Europe and CQC is a Chinese agency. UL, CSA, VDE and TUV all are international entities with worldwide presence.

Once an isolation product manufacturer like TI obtains electrical safety certifications from each of the desired independent test agencies, equipment manufacturers can confidently use the devices in their products worldwide, provided the certified device's ratings and other conditions of acceptance are effectively covered in the end product. Certification agencies not only test and evaluate digital isolators during qualification, but they also perform frequent audits of production facilities to help confirm that isolator manufacturers maintain the minimum electrical functional safety standard performance as initially qualified by the certification agencies. By using certified digital isolators, OEM end equipment manufacturers greatly benefit in terms of cost and time by avoiding extensive high-voltage insulation testing of the TI Isolator during the end-equipment certification by these agencies.

TI's isolation ICs are third-party certified for multiple component and end-equipment electrical safety standards. Component standards such as German Institute for Standardization (DIN) VDE V 0884-11 (VDE V 0884-11):2017-01 and UL 1577 evaluate the intrinsic insulation characteristics and high-voltage capabilities of TI isolators. End-equipment electrical safety standards such as International Electrotechnical Commission (IEC) 60950-1, IEC 61010-1, IEC 60601-1 and Guobiao (GB) 4943.1-2011 stress the insulation capabilities of isolators

in the context of specific end-equipment requirements. [Table 1](#) shows various electrical safety certification standards providing the safety requirements for digital isolators.

Table 1. Component and End-equipment Electrical Safety Standards

Electrical Safety Standard	Description
DIN VDE V 0884-11 (VDE V 0884-11):2017-01	Magnetic and capacitive coupler for basic and reinforced isolation
UL 1577	Standard for safety: Optical isolators
IEC 60950-1	Information technology equipment – Safety – Part 1: General requirements
IEC 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements
IEC 60601-1	Medical electrical equipment – Part 1: General requirements for basic safety and essential performance
GB 4943.1-2011	Information technology equipment – Safety – Part 1: General Requirements

Reinforced Certified Digital Isolators

To be VDE-certified as a reinforced insulator at the component level, digital isolators have to pass a minimum surge isolation test voltage of 10,000 V_{PK}. Some of TI's reinforced isolators are able to meet up to 12,800 V_{PK} surge levels and thus clearly pass the minimum criteria set by the VDE standard.

Explore TI's Basic and Reinforced Digital Isolator Families

Use this list to learn more about some of our VDE-11 certified devices, or visit our [isolation page](#) to find a digital isolator for your design.

- [ISO67xx](#): Basic and reinforced isolation for cost-sensitive applications.
- [ISO77xx](#): Basic and reinforced digital isolators.
- [ISO78xx](#): Highest isolation rating, widest creepage/clearance, reinforced digital isolators.

Additional Resources

- Download the white paper, [High-voltage reinforced isolation: Definitions and test methodologies](#).
- Learn more about isolation with TI's [Isolation Glossary](#) and in the training video [Isolation Basics: An Introduction to Standards and Terminology](#).
- View all of TI's [Digital Isolators Certifications](#).

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