Functional safety

The importance of developing electronic and electrical systems according to a safety plan

Functional safety is about reducing the risks of simple and complex systems so they function safely in the event of an electrical or electronic malfunction. As more products incorporate complex microelectronics and software into their design, quality and safety engineers are becoming increasingly challenged to assess and implement functional safety at the system level.

At UL, we help improve the safety of products and the systems containing those products by navigating the complex technical challenges of today's functional safety landscape. A few examples include autonomous vehicles, machine safety and robotics, industrial control systems (ICS), consumer smart home products, smart factories, and supply chains.

What functional safety standards does UL provide guidance for today?

We can provide guidance through services including assessment, training, and advisory services to suit your needs. Each industry has their own functional safety standard. However, the most commonly supported standards at UL are related to automotive, industrial automation, energy systems, e-mobility, and oil and gas. These include:

- **IEC 61511**
- **ISO 26262**
- **ISO/PAS 21448**
- **UL 4600**, the Standard for Safety for the Evaluation of Autonomous Products
- **IEC/UL 60730**, the Standard for Automatic Electrical Controls for Household and Similar Use Annex H

- **UL 991**, the Standard for Tests for Safety-Related Controls Employing Solid-State Devices
- **UL 1998**, Standard for Safety for Software in Programmable Components
- **IEC 62061**
- **ISO 13849**
- **IEC 61508**

Who practices functional safety?

Product leads, quality and assurance personnel, systems engineers, and supply chain managers may all practice functional safety throughout their careers. Additionally, regulatory managers and lawyers may be called to evaluate safety case documentation in a court of law.

Does UL offer functional safety training?

We offer certified functional safety professional (UL-CFSP) training for automotive, industrial, machinery, and various UL Standards. Additionally, we provide introductory-level training specifically for on-road passenger cars, trucks, buses, motorcycles and autonomous vehicles.

Can UL help guarantee my product is safe?

Our assessment team can help point out where designs and processes do not meet applicable standards, but UL as a third party conformity assessment body cannot advise on potential solutions to make a product comply with the applicable requirements. In order to show compliance to functional safety as well as maintain credibility as a Notified Body for the EU Machinery Directive, we believe in partnering with our customers early on to help ensure safe product development and traceability to a safety plan.

For more information, email us at global.functionalsafety@UL.com or visit us at UL.com/functionalsafety.

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