# **FUNCTIONAL SAFETY IN A NUTSHELL**

A COMPACT OVERVIEW OF THE FUNCTIONAL SAFETY REGULATION LANDSCAPE

The growing demand for sophisticated technology has pushed the manufacturing industry into the fast lane. As technology is evolving rapidly, manufacturers face the challenge of developing components and systems quickly and at low cost. They must also ensure that their products meet all necessary functional safety and quality requirements.

By doing so, hazardous states in systems or components can be minimised to limit damage to people, property and environment.

To avoid business losses and timeconsuming reworks, it is important that manufacturers ensure that their products adhere to the quality and safety guidelines from the onset.

But, the wide range of functional safety standards creates a complex regulation landscape, sometimes making it difficult to find the appropriate product or system-related standard. TÜV SÜD can help you to simplify that complexity by identifying and interpreting the applicable functional safety standards.



### **FUNCTIONAL SAFETY** COMPLEXITY

IEC 61508 – basic functional safety standard applicable to all kinds of industry.











The functional safety pyramid offers a useful hierarchy to understand the scope of different functional safety standards and provides an interpretive approach for categorisation. With the support of the defined categories manufacturers, suppliers and operators can elaborate which standard might be applicable.

#### **Basic Safety Standards**

IEC 61508 – Functional safety of electrical/electronic/programmable electronic safety-related systems

### **Group Safety Standards**

- IEC 60601 Medical electrical equipment
- ISO 26262 Road vehicles
- **ISO 25119** Tractors and machinery for agriculture and forestry
- IEC 62061 Safety in machinery
- ISO 13849 Safety of machinery -
- Safety-related parts of control systems
- IEC 61511 Safety instrumented systems for the process industry sector
- IEC 60335 Household and similar electrical appliances
- IEC 61513 Nuclear power plants
- EN 5012X Railway applications
  - EN 17206 Entertainment technology

Group Safety

Standards

Product Safety

Standards

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#### **Product Safety Standards**

- EN 81 Safety rules for the construction and installation of lifts
- EN 115 Safety of escalators and moving walks
- IEC 61800-5-2 Adjustable speed electrical power drive systems
- IEC 61496-1 Electro-sensitive protective equipment
- IEC 61131-6 Programmable controllers
- **ISO 15998** Earth-moving machinery
- IEC 50156 Electrical equipment for furnaces and ancillary equipment
- ISO 10218 Robots and robotic devices
- ISO 13850 Emergency stop function
- IEC 60730 Automatic electrical controls
- IEC 62109 Safety of power converters for use in photovoltaic power systems
- IEC 61784 -Industrial communication networks
- EN 50495 – Safety devices required for the safe functioning of equipment with respect to explosion risks
  - IEC 62304 Medical device software -Software life-cycle processes

The most specific standard has precedence.



By testing and certifying components, products and systems according to different standards, manufacturers are able to use them for various applications in different industries.

## **HOW CAN TÜV SÜD HELP YOU?**

TÜV SÜD can support you in selecting the applicable standard for various products, applications and industries, as well as providing relevant assessments, tests and certifications.



#### Safety checklists and best practices

Define relevant safety features before development to ensure compliance.



#### Documentation assistance and verification

Use tools for accurate documentation and reporting, as per certification guidelines, during development lifecycle.



#### Risk and hazard analysis

Minimise the risks during development to smoothly achieve a functional safety certification.





#### Independent safety assessment

Detect potential flaws at an early stage in the development process to avoid costly rework.

#### Product/system testing

Test your product or system according to the relevant functional safety requirements.



#### Product/system certification

Demonstrate your product or system quality and safety with a globally recognised certification mark.



#### Training

Learn more about relevant functional safety standards and participate in the **Functional Safety Certification** Programme (FSCP).



Find out more about TÜV SÜD's functional safety expertise www.tuvsud.com/functional-safety

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