

Functional Safety (FuSa) of Electronics and Software According to IEC 61508 and ISO 26262 - Face-to-Face Training

Objectives

Learn about pre-requirements from management at company level and project management to achieve functional safety of electronics and its related software according to the state of the art.

The training course "Functional Safety" teaches basics of functional safe systems in the area of embedded systems. It covers items from terms and definitions to objectives of safety in relationship to the basic norm IEC 61508

Specifics of the related norm for automotive vehicles ISO 26262 are discussed in alternating fashion. The training also allows to apply the learned methods generically and according to other norms or standards.

YOUR ADVANTAGES:

Intensive jump start into the topic of Functional Safety

Refresh and intensify your knowledge

Training certificate for participants as to comply with the related standards

Effective preparation for potential exams

You can use the training documentation as a compendium

Participants

The functional safety training mainly addresses those with executive responsibility or tasks in the area of safety. This includes management in general, and particularly safety managers or project managers. The training moreover addresses process engineers and method engineers as well as system engineers, system architects and system designers. Developers working at implementation level might not be the primary target group but will generally benefit from a better understanding of safety-relevant topics which is sometimes part of their requirements profile.

Requirements

Experience with control electronics (embedded systems)

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Content

Functional Safety: Basics and Introduction

- Terms and definitions
- Purpose of norms and international standards
- Safety related functions and their integrity
- Example systems
- Definition and components of risk
- Types of fault and failures
- Relationship to legislation

Base Norm IEC 61508

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- Objectives and applicability
- Integrity levels (SIL)
- Documentation in focus

Safety Lifecycle According to IEC 61508

- Phases and meaning
- Requirements
- Verification
- Assessment
- Management of functional safety

Overall Aspects of ISO 26262

- Risk assessment based on factors
- Normative references
- Safety plan and safety case
- Development Interface Agreement (DIA)
- Configuration management
- Change management
- Verification
- Documentation

Hazard Analysis and Risk Assessment (HARA) According to IEC 61508

- Required input
- Required risk reduction
- SIL and failure rates per operational mode
- Common cause failures
- ALARP method
- Risk classification
- Quantitative SIL determination
- Risk graph (incl. exercise)
- Hazardous event severity matrix (qualitative)
- Layer of protection analysis (example)

Aspects of HARA According to ISO 26262

- Classification by severity, exposure and controllability
- Automotive SIL (ASIL)
- Risk matrix

System Design According to IEC 61508

- Allocation of safety requirements
- Effects of dependencies
- Functional requirements
- Integrity requirements
- Architectural constraints
- Hardware fault tolerance (HFT)
- Safe failure fraction (SFF)
- Quantification of effects of random hardware faults
- Proven in use argumentation
- Synthesis of elements
- Requirements on data communication
- Dangerous faults and required actions
- Failure analysis

Safety Related Hardware as per ISO 26262

- Required quantitative assessments
- Probabilistic metric for random hardware failures (PMHF)
- Single point fault metric (SPFM)
- Latent fault metric (LFM)
- Qualification of components
- ASIL decomposition

Software Safety Lifecycle as per IEC 61508

- Hardware/software interface (HSI)
- Additional requirements for managing software
- Software architecture

- Support tools and programming languages
- Test and integration
- Modification process
- Verification of inputs and outputs according to the development process

Select Software-Related Aspects of ISO 26262

- Modifications
- Structural metrics
- Tool classification and qualification

Example of a Microcontroller with Integrated Safety Measures**TOP 5 Dos and Don'ts****Note:**

- An interactive and individual assessment of the learning progress is performed for each chapter; results are available at real-time and as pdf file.

FACE-TO-FACE TRAINING

Price *	Duration
2.100,00 €	3 days

Training code: E-SAFETY
* Price per attendee, in Euro plus VAT

Face-To-Face - German

Date	Duration
02.09. – 04.09.2026	3 days

Live Online - German

Date	Duration
10.06. – 12.06.2026	3 days

Coaching

Our coaching services offer a major advantage: our specialists introduce their expertise and experience directly in your solution process, thus contributing to the success of your projects.

We will be happy to provide you with further information or submit a quotation tailored to your requirements.