

DEUTA Safety Systems -

Worldwide leading competence in
configurable safety systems
- from a single source -



DEUTA-WERKE 
Technology under Control

Evaluated

SIL 3

Safe speed

Hardware

Software

Project planning



DEUTA Safety Systems

Simply Safe

DEUTA is the sole rail **Safety Systems** provider that holistically manufactures and configures components of its own design and manufactures the final products, all in-house. Take advantage of our years of experience in implementing safety-relevant projects to your own benefit.

The DEUTA Safety System is a part of the vehicle safety report. Apart from the **reduced time** and **financial** cost of system approval, our customers benefit already during the project phase from the **approval competence and the future-oriented obsolescence policy**. We understand the safety requirements of speedy processing and ensure a long service life for our products through the entire life cycle.

Together with its customers DEUTA prepared a **market directed system project strategy** on a partnership basis and developed the appropriate **certified product** range. DEUTA Safety Systems cover the entire product range of speed measurement, recording, evaluation and visualisation. The technological variance of DEUTA products simplifies customer-specific adaptations. Streamlined evaluations ensure rapid SIL confirmation for project adjustments.

The system components fulfill safety functions in the system context up to the safety level of SIL 3.



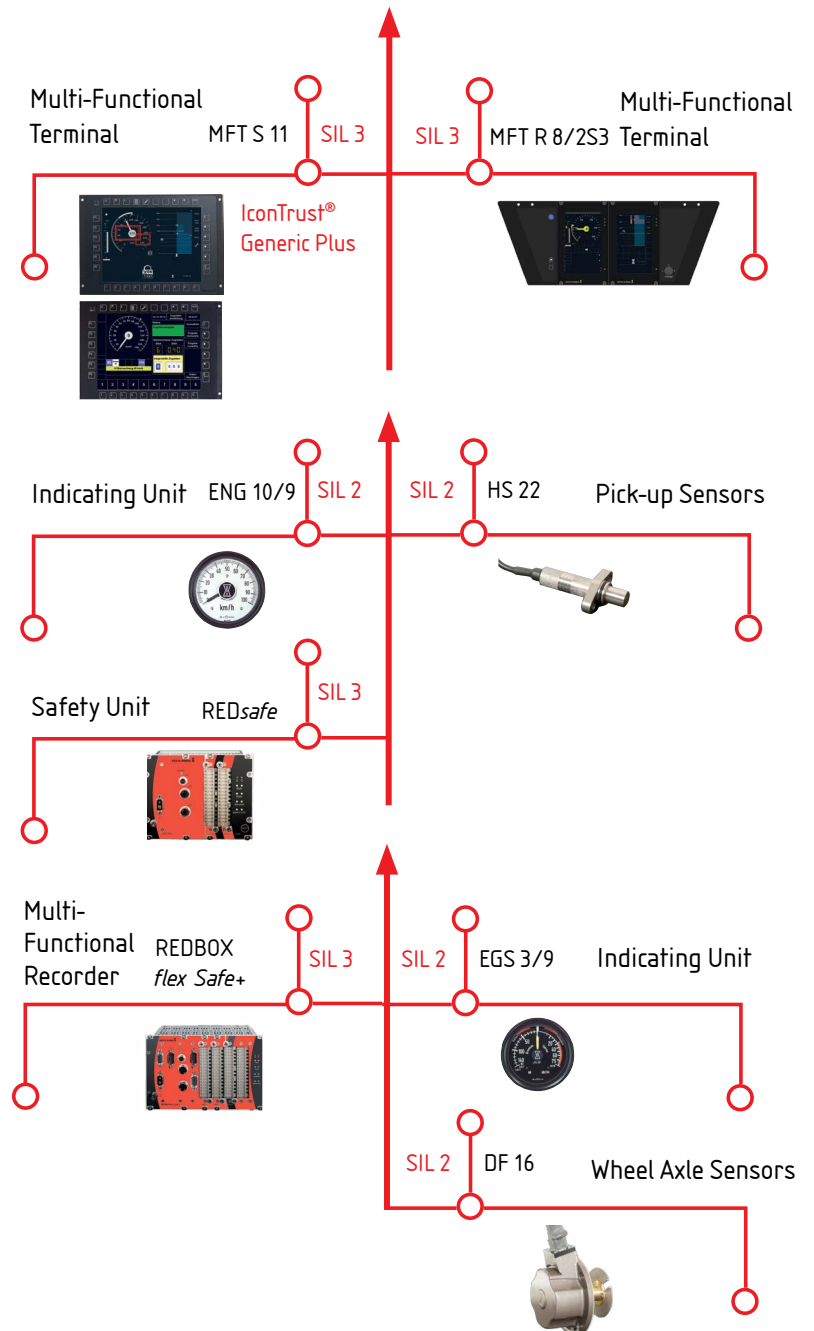
»Product development and standardisation

The right DEUTA system and the appropriate service«

DEUTA's safety competence is reflected in a modular system of operationally proven products, experienced in-house safety managers and general safety report. Time, expenditure and risks can be competently assessed and expediently managed. This leads to consistent product development and standardisation. As a result, projects can be realised economically and promptly at all levels.

DEUTA starts Safety Integrity Level (SIL) project planning with the **concept**, the **definition** of the **scope of validity**, a **comprehensive analysis** and the specification of required Safety Integrity Levels for the different safety functions. At the forefront of successful SIL project planning is a **detailed hazard analysis** and a **requirements catalogue** that is coordinated with our customers. From the beginning our Safety Managers accompany the development process in coordination with the system expert.

The DEUTA Safety Managers ensure compliance with the necessary measures and methods for achieving functional safety. They accompany the entire development process including **documentation** and **design reviews** up to the **product launch**. Their qualified specialist knowledge ensures that hardware and software conform to standard and meet the current state of technology and the required Safety Integrity Level. Each development step is verified.



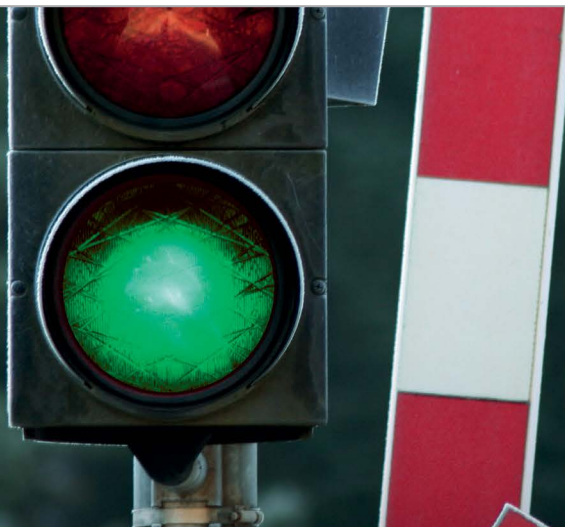
DEUTA Safety History

SIL 2 to SIL 4

Every DEUTA Safety System is individually matched to customer requirements. Years of experience with safety-relevant projects enable an efficient, targeted approach.

Our services at a glance:

- **Development of SCUs** (Safe Control Units) according to customer requirements for the safety functions – e.g. with:
 - Standstill detection – SIL 4
 - Roll-back protection – SIL 3
 - Speed monitoring – SIL 4
 - Speed indicator – SIL 2
 - DSD function with the help of a manual button and a foot pedal according to the specified safety integrity level – SIL 4
 - Transmission of speed value – SIL 3
- **System drafts** with operationally proven or newly developed DEUTA components subject to the required Safety Integrity level of the different safety functions
- Development of an **overall architecture**
- **Obtaining an approval** for individual safety functions according to valid safety standards for railway applications (DIN EN 50126, DIN EN 50128, DIN EN 50129)
- **Integration tests** and **creation of necessary SIL documentation** and system report
- **Coordination** with the **system expert**
- **Management of obsolescence processes** including assimilation of the report or re-certification



»DEUTA products offer added system safety Modular and unique for an entire life.«

The functional safety of the DEUTA Safety System (DSS) must be guaranteed throughout the entire life cycle. The **active DEUTA obsolescence management** within a consequent product cycle strategy is the best prerequisite for the longevity of a SIL component and the corresponding report.

With the **assessment of operationally proven products**, even an older DEUTA product within a system project can assume responsibility for safety-relevant functions. A product is considered "operationally proven" when a documented field nominated assessment shows that on the basis of its previous application the product is demonstrably suitable for use in a safety-related system.

The operationally proven products can be combined in an evaluated system and thus realise the required Safety Integrity Level. The procedure accommodates the vehicle manufacturers who are faced with changing approval processes. By standardising the product development, targeted customer requirements can be economically and promptly realised from the available modular systems. A continuous expansion of the system functionalities, realised through the expansion of system components and their function, is the solution for future requirements in various applications.

Validation and commissioning finalise the SIL project planning. At DEUTA, production validation is **accomplished in the accredited in-house testing laboratory**. The applied measures and methods are documented in the technical safety report. The calculation of the hazard rate is also recorded in this document. The resulting hazard rate must lie below the limit value which is dependent of the targeted Safety Integrity Level. The safety report contains technical application conditions with explicit instructions for the safe use of the product. The subsequent **controlled commissioning** in the field ultimately ensures the successful execution of the SIL project planning.

»DEUTA High-End Safety System«



SIL 2 - 4

DEUTA REDBOX®
flex Safe+



SIL 2 - 4

DEUTA REDsafe



SIL 3



Multi-Function Terminal
MFT S11 & MFT S111



SIL 3



Multi-Function Terminal
MFT S11 & MFT S111



SIL 3



Multi-Function Terminal
MFT R8 & MFT S11



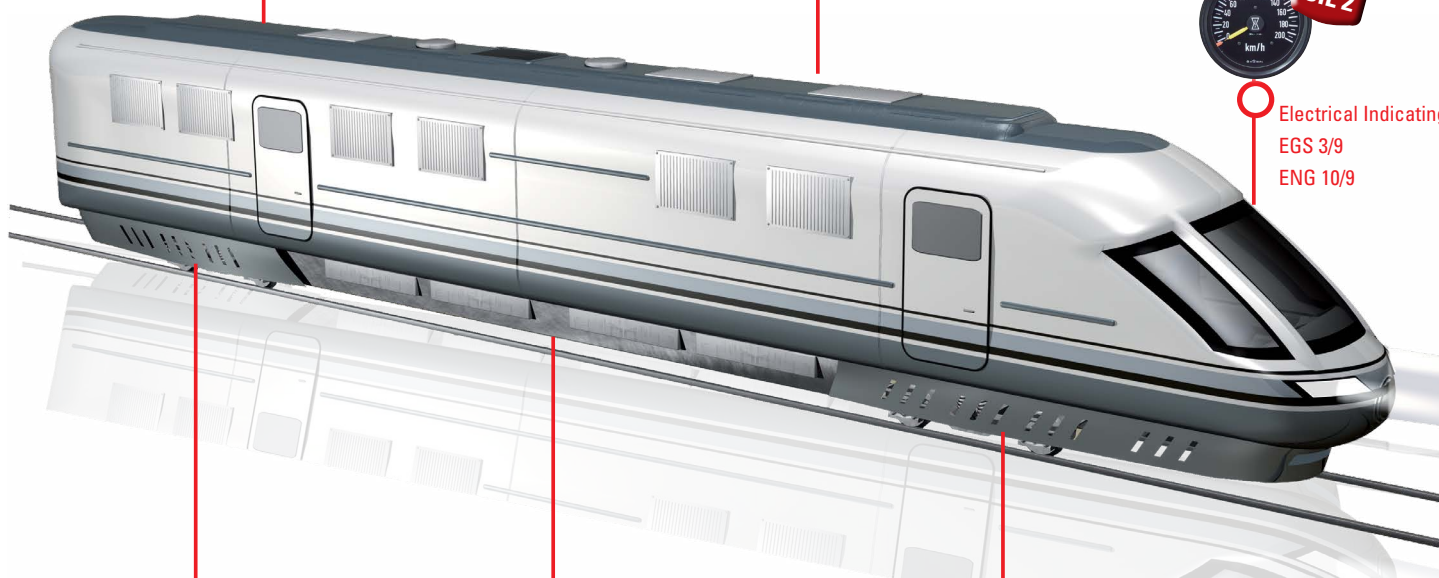
SIL 2

Electrical stepper motor
Indicating Unit ESG 14



SIL 2

Electrical Indicating Unit
EGS 3/9
ENG 10/9



SIL 2

Speed Sensor
DF 16/1



Doppler Radar
Sensor DRS 05/1S1



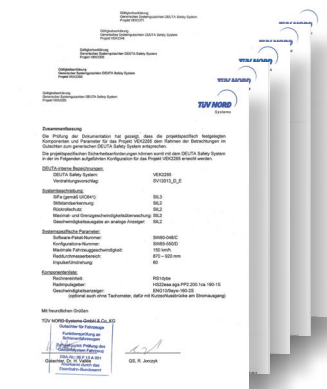
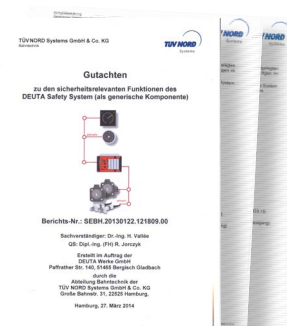
SIL 2

Pick-up Sensors
HS 22
DF 22

Unlimited evaluation

A SIL report has a principally **unlimited validity**. A new evaluation or modified evaluation only then becomes necessary when changes are made to the utilised components, the functionality (software) or the system.

General reports assess the stable system basis and qualify the system for a broad range of vehicles. Subsequent customer-specific project adaptations are partially evaluated, with essential savings in time and costs.



»SYSTEM APPLICATIONS

for ETCS, TSI, PZB, LZB...«

DEUTA Safety Systems as V-actual fall-back level for ETCS:

DEUTA Safety Systems in European ETCS projects form the fall-back level for the real speed. The REDsafe, Indicating Units and Multi-Functional Terminals with safe IconTrust® and SelectTrust® technology enable the continued travel of the train even when the EVC computer fails.



DEUTA Safety Systems as PZB-/LZB supplement:

DEUTA has also optimised the safety systems for vehicles on PZB routes of the Deutsche Bahn and elsewhere. The software applications on the Multi-Functional Terminals correspond to the specifications of the DB product requirement specifications. DEUTA supplies the hardware and software for this project. The DEUTA REDBOX® recorder and the Multi-Functional Terminals are delivered together with a valid EBA notification.



DEUTA Safety Systems for TSI:

The DEUTA Safety Systems comply with the harmonised specifications of the Technical Specification for Interoperability, TSI. In this way DEUTA offer the best prerequisites for a safe interoperable and technically compatible European railway system.



Successful projects

The modular product kit of DEUTA SIL components forms the basis of DEUTA Safety Systems in different configurations. As the only provider worldwide, DEUTA provides sensors, recorders and terminals for a Safety System up to SIL 3.

External experts are already involved during the early planning and concept phases. The system structures, e.g. diverse redundancy, dynamic interfaces, galvanic isolation, diagnostic functionality, etc., are all implemented in the safety concepts.

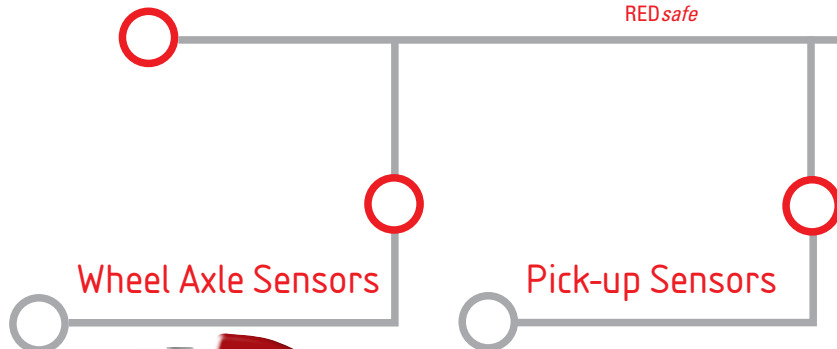
Our success proven us right: DEUTA has to date successfully manufactured and integrated numerous Safety Systems. DEUTA is today the worldwide leader for providing Safety Systems in railway vehicles.



MFT S11 & MFT S111
with IconTrust® 



REDsafe



Multi-Functional Terminals



MFT S11 & MFT S111
with IconTrust®

MFT R8
with IconTrust®

Travel Data Recorder



RED flex Safe+

Indicating Units



EGS 3/9 & ENG 10/9



ESG 14



Doppler Radar



DRS 05/1S1



DEUTA-WERKE

DEUTA-WERKE GmbH

Paffrather Straße 140 · 51465 Bergisch Gladbach · Germany

Phone +49 (0) 22 02 958-100 · Fax +49 (0) 22 02 958-145

support@deuta.de · www.deuta.de · www.icontrust.com

