

DEUTA DSD Safety System

The Safe Product Package

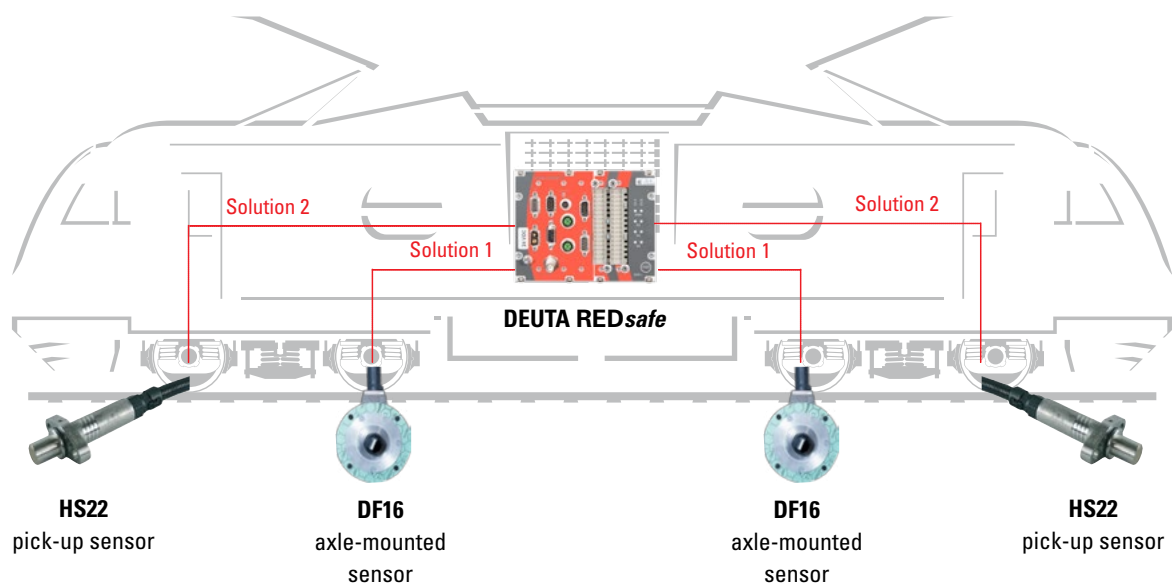


DEUTA-WERKE 
Technology under Control

»DEUTA DSD Safety System

The safe product package«

The DEUTA DSD Safety System is a SIL certified product package, consisting of the safety unit DEUTA REDsafe and either two wheelpulse sensors or pick-up sensors. The standard SIL system is the on-board extension of track based safety systems, such as intermittent automatic train control PZB, continuous automatic train control LZB and the European Train Control System ETCS. The system concept corresponds to the safety-related application conditions SIL 3 for DSD, with due regard of standstill detection, monitoring of maximum speed and monitoring of limit speed.



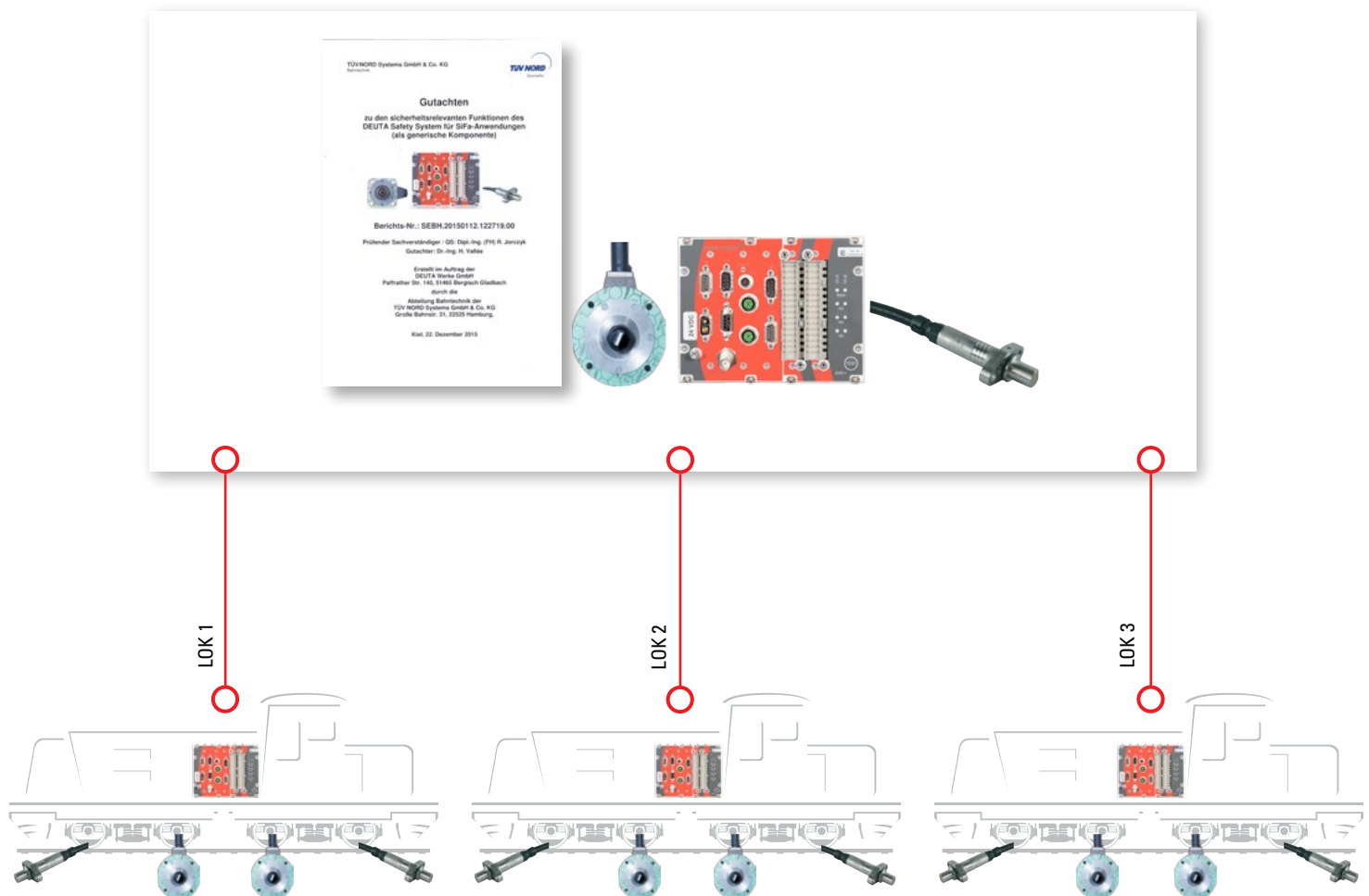
- » **Solution 1:** DEUTA REDsafe combined with DF16 axle-mounted sensors
- » **Solution 2:** DEUTA REDsafe combined with HS22 pick-up sensors

»With SIL Certification«

The DEUTA DSD Safety System was assessed as a standardized, project-neutral product package. It can easily be implemented on trains up to 200 km/h as a finished product package without further development efforts and technical clarification.

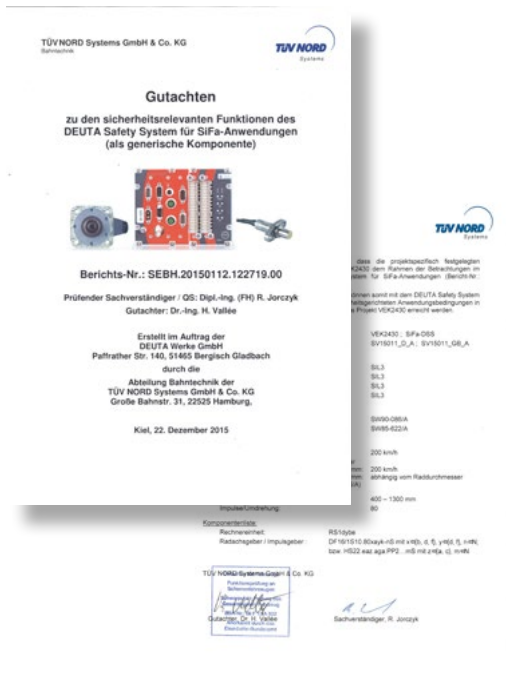
Advantages of the DEUTA DSD Safety Systems:

- » Finished, defined product package
- » Available assessor certificate - up to SIL 3
- » Short engineering phases



»Generically assessed...

...as safe system«



While project-specific assessments are individually reviewed and evaluated, DEUTA developed the DSD Safety System as a standard solution which is, on the device side, applicable without development and assessment effort for vehicles with a maximum speed of up to 200 km/h.

The assessment of the TÜV Nord confirms the range of the products.

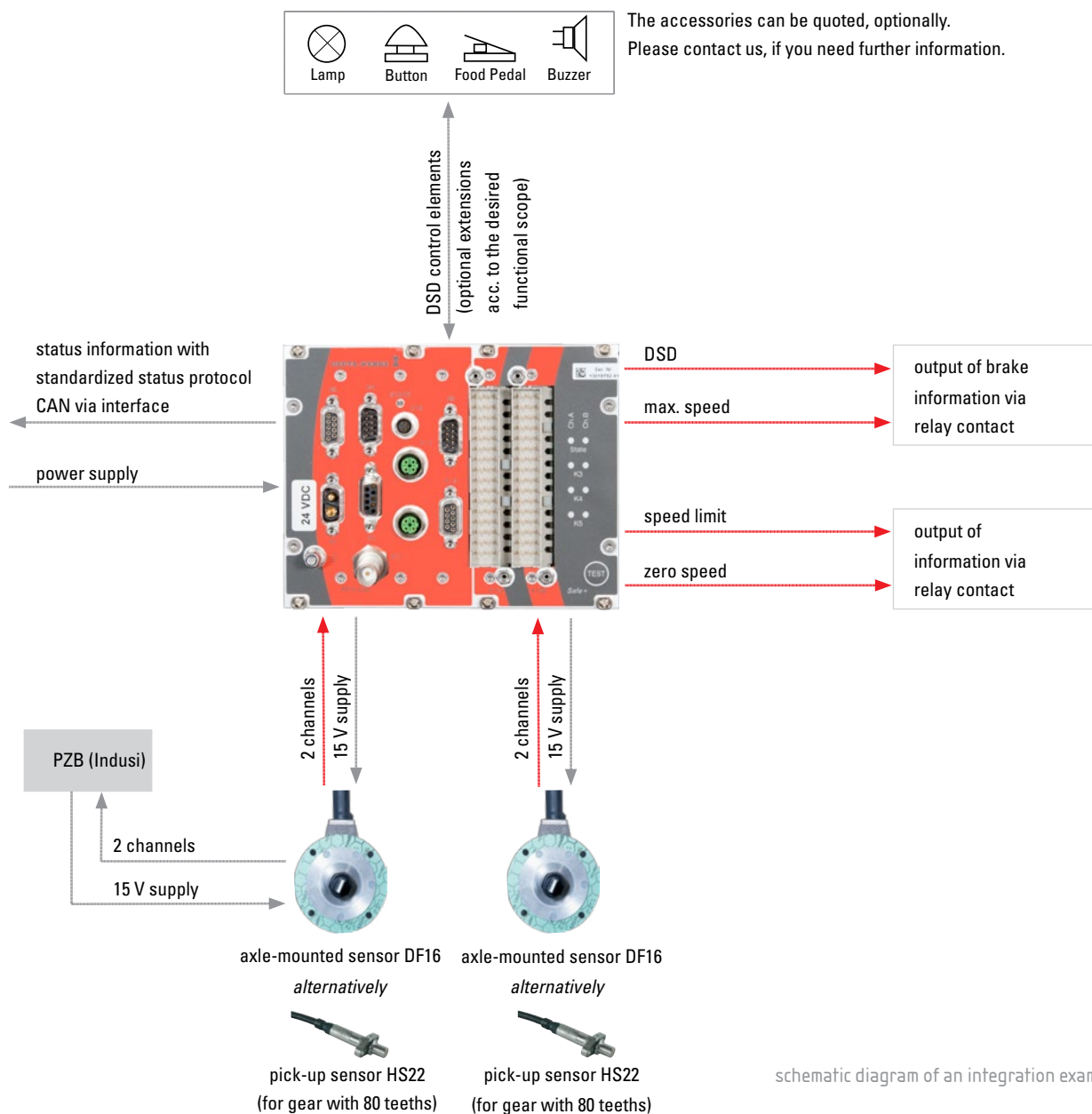
Safety Level of DSD Safety Systems:

- » DSD according UIC 641 and DB specification SIL 3
- » Standstill detection SIL 3
- » Monitoring of maximum speed SIL 3
- » Monitoring of speed limit SIL 3

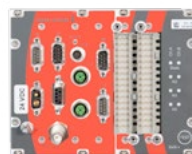
»Systematically integrated«

The REDsafe is equipped with DSD-functionality, additional safety functions and various interfaces for the transmission of status messages to a higherlevel system. The Safe+ module of the REDsafe was designed in a two channel structure with independent processors and control relays. This allows SIL conformity of safety functions up to level 3.

The safety concept of the sensor integration bases primarily on the redundancy of the transmitted sensor signals depending on the input signals and functions of the safe+ module. Therefore, two sensors are required which must be installed on independent axles .



»Technical Data«



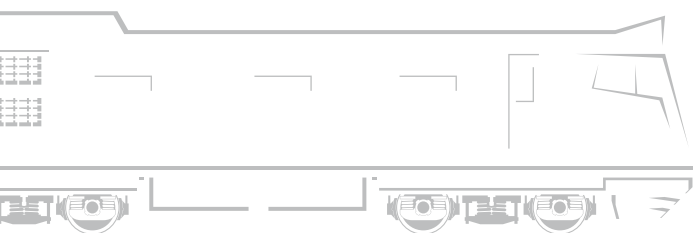
REDsafe 1 dybe

The REDsafe takes up the safety functions, offering high flexibility in the parametrization and works as time-time or distant-distance DSD. Die REDsafe consists of a safe+unit (SCU) and a communication module including power supply. The REDsafe is developed according UIC 641 and EN 50126, EN 50128, EN 50129 and EN 50155 standards.

Not the right solution?

If you prefer a project specific solution, we will be glad to configure the best solving concept beyond the DSD SiFa standard system.

DEUTA REDsafe 1 dybe	
Operating voltage	24 VDC, 72 VDC oder 110 VDC
Power consumption	typ. 23 W / max. 30 W
Temperature range	-25 °C bis +70 °C (operation) -40 °C bis +85 °C (storage)
2 frequency inputs	squarewave, f_{max} 10,0 kHz, 2 channel
13 digital inputs	high level +12 up to +154 VDC
1 analog output	0 (4) bis 20 mA
3 x 2 relay contacts	for brake, standstill, limit speed
2 relay contacts	for DSD lamp and buzzer
1 relay contact	for failure output
vehicle bus	Ethernet, MVB, CAN
Service PC connection	1 Ethernet, MVB, CAN
Safety functions	Driving safety device DSD Standstill detection Rollback detection Monitoring of the maximum speed Monitoring of the limit speed
Dimensions	
Width	162.2 mm
Height	128.4 mm
Depth	169 mm
Weight	approx. 1.75 kg
Protection category	IP 20
Connection	2 x F48-plug, DIN 41612 for IP 20, 1 x USB 2 x MVB, 1 x USB, 2 x Ethernet M12, 1 x USB 1 x D-Sub plug 2-pins





HS 22...PP2...

The DEUTA pick-up sensors determine speed and direction of rotation. They are extraordinarily durable, as they operate contact-free and therefore almost wear-free. The measurement is made by scanning a gear or pole wheel, while the sensor is mounted in a defined distance over the wheel.



DF 16/1 S10.80 a, ac, ad, af, nf

Proven impulse sensors DF16/1S10.80
Axle-mounted sensors are driven via a mechanical coupling on the axle of the vehicle. Impervious to dirt and vibration, they are virtually maintenance-free.

	HS...PP2...		DF 16/1S10.80 a, ac, ad, af, nf
Working principle	2 channel system	Working principle	up to 6 channels
Frequency range	0 to max. 20 kHz, depending on cable length and external load	Rotational speed range	0 to 2,000 min ⁻¹
Operating distance, air gap	0.5 to 2.0 mm	Pulse p. rotation p. channel	80
Operating temperature	-40° C to +120° C	Operating temperature	-40° C to +70° C
Storage temperature	-40° C to +85° C	Storage temperature	-40° C to +70° C
Protection class	IP67	Protection class	IP66 housing IP54 drive side
Pulse duty factor	50 % ±10 %	Pulse duty factor	50% ±20%
Overlap safety	at least 30°	Overlap safety	at least 18°
Short-circuit-proof	yes	Short-circuit-proof	yes
Reverse polarity protection	yes	Reverse polarity protection	yes
Power supply U_B	+5.5 VDC to +30 VDC	Power supply U_B	10 VDC to 30 VDC
Insulation voltage	500 V _{EFF} / 50 Hz / 1 min	Insulation voltage	1500 V _{EFF} / 50 Hz / 1 min
Power consumption per channel	<20 mA	Power consumption per channel	<35 mA
EMC	EN 50155, EN 50121-3-2, EN 61000-6-x	EMC	EN 50155, EN 50121-3-2, EN 61000-6-x
Permitted mechanical load	EN 61373, category 3	Permitted mechanical load	EN 61373, category 3
Weight	approx. 340 g with 1 m cable and open cable end	Weight	approx. 3.3 kg (without plug and drive)
MTBF	up to 2,015,000 h, ground mobile, depending on the version	MTBF	up to 335,000 h depending on the design
Indication medium	ferromagnet. gear wheel, module 2 - involute toothing acc. DIN 867 - 80 teeth	Design drive	a: cross slotted shaft ac: drive fork ad: drive tongue 20 x 7 af: driving disk nf: smooth shaft
Gear wheel material	steel, demagnetised St37, St50 or 10-10 DIN EN 10025, grade FE430A		

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