

Hydrogen Storage Control Unit

for safe, hydrogen powered commercial vehicles





Refuel, but safely.

Hydrogen is a promising – but also challenging – fuel for sustainable mobility solutions. We have developed the “Hydrogen Storage Control Unit” (HSCU) specifically for commercial vehicle applications. It monitors and controls the refueling process at hydrogen filling stations and und makes a significant contribution to the safety and efficiency of hydrogen-powered vehicles.

Task of the H₂ tank system

The tank control unit or “Hydrogen Storage Control Unit” is part of the hydrogen tank system and ensures a controlled transfer of hydrogen – from the hydrogen filling station to the installed hydrogen tank storage and on to the combustion engine or fuel cell system. With its monitoring function, the HSCU also guarantees safe hydrogen storage in the vehicle in compliance with legal requirements. Another secondary function of the HSCU is the calculation of the hydrogen SOC (“state of charge”).



Functions of the HSCU:

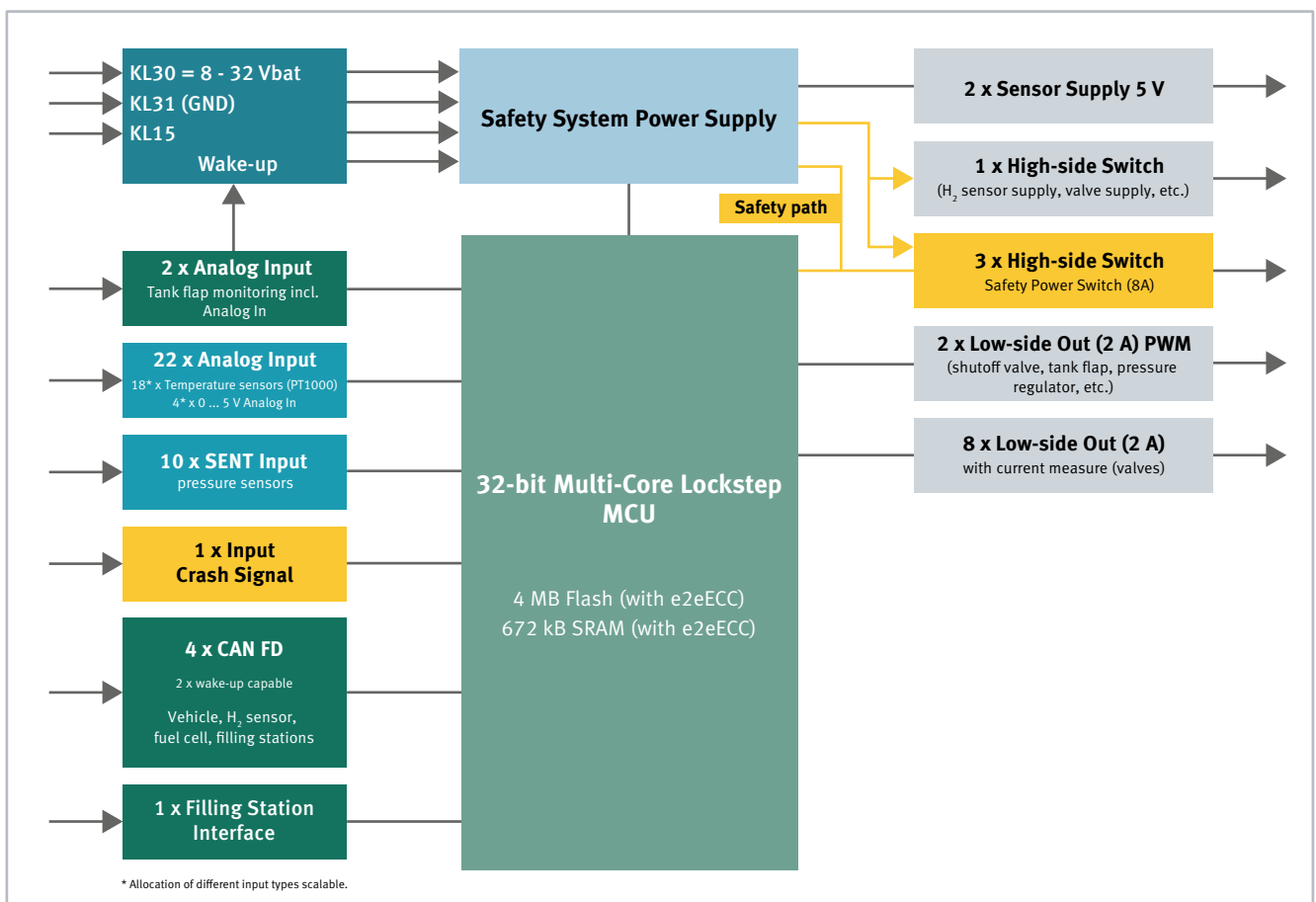
- Tank pressure regulation of the liquid hydrogen storage tank
- Hydrogen gas concentration monitoring/warning
- Monitoring of the refueling process and communication with the filling station
- Monitoring of critical tank parameters and reaction to limit values
- Communication with the engine or fuel cell control system
- Information of the driver about the system status and range
- Compliance with safety requirements according to ISO 26262 and IEC 61508
- Fulfillment of cybersecurity requirements according to ISO/SAE 21434 and UN regulations

Details and Architecture of the HSCU

Technical details

Concept	Designed for the control of 10 valves
Functional Safety	According to ISO 26262; max. ASIL C
Software standard	AUTOSAR 4.3
Software updates	ISO 21434 compliant
CPU	Infineon AURIX 2. Generation TC364D
Operation voltage	8 to 32 VDC (24 V supply)
IP protection class	6K9K according to ISO 20653

Architecture of the HSCU



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