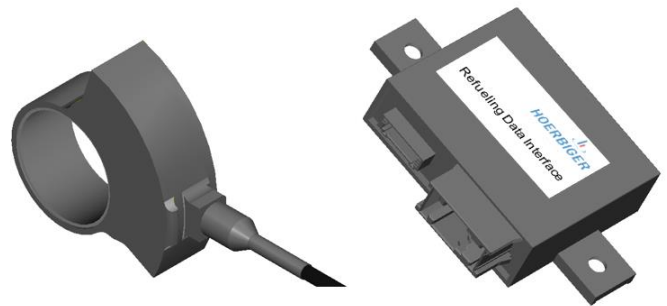


Function description

The RDI system provides a hydrogen fueled surface vehicle with the capability to send data to a hydrogen filling station during refueling via an infrared communication link. It fulfills SAE J2799. Information like receptacle type, tank volume, measured pressure and temperature etc. is transmitted unidirectional from the vehicle to the station.

The main purpose of the RDI system is to facilitate for the filling station to fill the hydrogen storage tank of the vehicle in about three minutes to the nominal pressure of the tank in a safe way and without the temperature of the gas in the storage tank getting too hot.

The vehicle side RDI-system consists of two parts: the infrared transmitter with cable (Tx) and the infrared electronic control unit (ECU). The ECU is the gateway to the CAN communication network and provides the transformation from CAN data to electrical IrDA format. Furthermore, the ECU has a safety barrier to limit the electrical power in the Tx (Ex proof).



IR transmitter module (left) and ECU (right)

Technical specifications

Hardware

- RDI ECU
 - Programmed Control Unit
 - Intrinsic Safety Barrier
 - (acc. to ATEX / IECEx, not certified)
 - CAN Interface
 - IP 5K2
- RDI Tx
 - IR transmitter module
 - electrical IrDA pulses according to SAE J2799
 - IP 6K6K and IP 6K9K

Interfaces

- CAN (e.g. 500 kBit/s)
- IR interface according SAE J2799

Certifications / Norms / Standards

- Developed according to EN 60079-0, -11, -18
- Developed according to Ex ib IIC T1 / Ex mb IIC T1
- SAE J2799
- E1 (ECE R10) Certification of German Kraftfahrt-Bundesamt (Federal Motor Transport Authority)

Power management

- Power supply 12 V-system: 8 – 16 V DC
- Power supply 24 V- system: 16 – 32 V DC
- Internal: 5 V DC

Dimensions

- RDI ECU: 120 x 78,5 x 25 mm
- RDI Tx: height ~20 mm
- inner diameter 33,5 mm

Weight

- RDI ECU: 65 g
- RDI Tx: 60 g

Storage and operating temperature (ECU & Tx)

- -40 to +85°C

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Errors and omissions excepted.