High speed data connectors and bird’s-eye view systems for towing vehicles

IEEE
Detroit, MI, USA
September 24, 2019
Agenda

Company Overview

Data Connectors

Bird’s-eye View System
Company Overview – Erich Jaeger GmbH + Co. KG

**ERICH JAEGER**
**BY THE NUMBERS**

- **25** industry standards supported, including:
  - SAE J560, J3008, J2863, J1239
  - ISO 1724, 1185, 7638-1/2, 25981, 12098
- **2** key certifications: IATF 16949, DIN EN ISO 14001
- **70** countries served
- **11** locations
- **1,000+** employees worldwide
- **900,000+** e-kits for passenger cars produced annually
- **1,000,000+** coiled cables for commercial vehicles produced annually
- **6,000+** unique products
- **e-kit wire harnesses for 1,200+ car models**
# Company Overview – Erich Jaeger GmbH + Co. KG

## ERICH JAEGER
**BY THE NUMBERS**

2,200+ OEM, aftermarket and general market customers

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Company Overview – Erich Jaeger GmbH + Co. KG

1927
Erich Jaeger founded the company for the production of electronic installation fittings and materials in Bad Homburg - Germany

1935
Production of an electrical indicator switch as the first product for the automotive industry

2016
Founding of the subsidiary Erich Jaeger México S. de R.L. de C.V. in Piedras Negras (Mexico) as a further production facility

2016
Joint development of a new connector system for passenger cars and light utility vehicles for the North American market with one of the biggest car manufacturers in the United States

2017
90th company anniversary
Data Connectors

Core competencies TODAY:

- Connectors
- Electronic Control Units
- Coiled Cables
- Wire Harnesses

Erich Jaeger is the leading global designer and manufacturer of electrical trailer tow connectors and cables
Data Connectors

New developments for TOMORROW:

Erich Jaeger is leading the way in development of data connectors and systems for towing applications
Data Connectors

SAE J3008 Connector for Camera applications

- Connector for rear view camera on trailer
- Designed and tested according SAE and USCAR 2
- Integrated in SAE J2863 Socket or as Stand-Alone
- Serial deliveries to major North American car/truck manufacturer since 2016

Pinout per SAE J3008

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Data Connectors

High-Speed Data Connector based on SAE J3008 (Design Study)

Main Design Specifications

- Meets all SAE/USCAR-2 requirements
- Works best from -40°F to +185°F (-40°C to +85°C)
- High reliability through robust design and testing
- Connection is waterproof in plugged and unplugged condition (IPX9K)
- Plug with contact TPA and strain relief
Data Connectors

High-Speed Data Connector based on SAE J3008 (Design Study)

**Receptacle / Socket**
- Lamella seal
- Cover spring closes automatically
- IP6K9K, IP67K

**Plug**
- Lamella seal
- Grip tab
- The cover rest of the plug ensures water and dust protection of the cover seal of the socket
- Robust coding
Data Connectors

Data Connector for commercial vehicles based on ISO 12098

- Integration of High-speed Interface(s)
- 1000Base-T1 Automotive Ethernet data pairs
- For shielded twisted pair cable
- 1 or 2 High Speed interfaces possible
- Power Pins for 1.5 mm² and 2.5 mm² cable
- Backward compatible with adapter spiral cable assembly
Data Connectors

Data Connector for commercial vehicles based on ISO 12098

- Backward compatible based on ISO 12098
- Spiral coiled cable with ISO 12098 plug and modified ISO 12098 plug for data interfaces
- Includes data interfaces
- Possibility of CAN implementation for certain applications
Bird’s-eye View System

Phase 1 System Overview

- 3x Cameras
- Display
- Truck ECU
- Cable assembly
- Trailer ECU
- 3x Cameras
Bird’s-eye View System

Phase 1 Bird’s-eye View System design:

- The System is designed for semi-trucks and trailers
- OE version will work on truck and trailer independently from each other
- Main focus of the initial system prototype is the determination of the angular position of the trailer with respect to the truck
- 3 cameras on truck and 3 cameras on trailer
Bird’s-eye View System

System performance findings:

- The system performed extremely well on real truck & trailer
- The real-time image stitching effect is comparable to BV systems of mainstream passenger car makers
- All the typical blind spots of semi-trailer and truck are covered by the system
- System will utilize 100Base-T1 and/or 1000Base-T1
- Future trailer systems will contain 5 cameras to avoid extreme deformation of stitched image for the trailer (truck + trailer ~ 17m total)

Next steps

- Continued trials on real truck & trailer
- Phase 2 adjustments and modifications of the system design
- Ruggedization of the system for production
Bird’s-eye View System

Cable and connector

Main Features:
1. Waterproof: IP X9K
2. Bending life cycle: >10000 cycles
3. High-speed connector integrated
4. Robust design

Sealing: IPX9K  Overmolding  Cable protection

Customer LOGO
Contact and Terms of Use

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Date of creation:
2019-09-17
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