



Passenger Comfort And Safety At High Speeds

- **Objectives:** Provide the best passenger comfort and safety
- **Solution:** Jewell Instruments **LSMP-2**
- **Benefits:** High-precision and fast response time
- **Results:** Safe and smooth trips at high speeds

Overview

China is home to the largest and most extensively used network of high-speed trains in the world. Based in Beijing, the Chinese Academy of Railway Sciences (CARS) is the leading research and development institute, supporting this important industry. CARS offers scientific and technological education as well as strategic consultation and certification services for

the Chinese railway industry. A focal theme is research and the testing of new materials, products, and technology. Founded on March 1, 1950, CARS is the only comprehensive research institute that is multidisciplinary and multi-specialty in the China Railway industry.

CARS was responsible for the evaluation and performance testing of the CRH380 for Bombardier. The CRH380A is an electric high-speed train that was developed by CSR Corporation Limited (CSR) and is currently manufactured by CRRC Qingdao Sifang. The CRH380A is designed to operate at a cruise speed of 350 km/h (217 mph) and a maximum speed of 380 km/h (236 mph) in commercial service. The original 8-car train-set recorded a top speed of 416.6 km/h (258.9 mph) during a trial run. The longer 16-car train-set reached 486.1 km/h (302.0 mph).

CRH380A is one of four Chinese train series which have been designed for the new standard operating speed of 380 km/h (236 mph) on the newly constructed Chinese high-speed main lines.

The Bombardier train version of the CRH380



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is called the Zefiro 380. Zefiro is a family of high-speed passenger trains designed by Bombardier Transportation (now Alstom) whose variants have top operating speeds of between 250 km/h (160 mph); 380 km/h (240 mph) and 400 km/h (250 mph). The family consists of the Zefiro 250, the Zefiro 300, and the Zefiro 380, which has a top operating speed of 350 km/h (220 mph) and design speed up to 380 km/h (240 mph).

To provide the very best in passenger safety and comfort, CARs has implemented almost 300 units of a custom Jewell [LSMP-2](#) (2g) high precision accelerometer for over a decade to measure acceleration, deceleration, and side to side motion. Space was a concern, and the Jewell LSMP Series accelerometers is an elegant solution.

The 1" cube linear accelerometers have 100,000 hour MTBF reliability and up to 20g full-scale sensing range. The [LSMP](#) sensors provide a wide input range and bandwidth features that meet the demanding needs of a variety of Rail as well as aerospace applications.

CARS has also utilized more than 100 units of custom [DXA-100](#) accelerometers to measure acceleration and deceleration of magnetic levitation (Maglev) trains in China +140 km/h (+87 mph) high speed train signal control system & Automatic Train Operation. Our engineering team has the technical expertise and over 50 years of experience designing custom products tailored to meet your exact needs. Contact us today to find out more!



About Jewell Instruments

Jewell Instruments is a world leader in the design, manufacture, and distribution of high-precision products. Our expertise includes acceleration and tilt sensors, electronic compasses, avionics components, solenoids, and panel meters. The extensive application knowledge we have obtained through decades of experience allows us to provide custom solutions for a diverse group of industries. In fact, customers from all over the globe contact us for solutions to aerospace, medical, industrial, and telecommunications applications - to name a few.

To find out more, visit our website!



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