



MAIN FEATURES

▶ ENVIRONMENTAL ADAPTABILITY

- ▶ Ambient temperature: -40+40°C;
- ▶ Relative humidity: 95% (maximum air temperature: 25°C);
- ▶ Altitude: ≤1,500 m;
- ▶ High wind: 15m/s common year (occasionally 33m/s);
- ▶ Others: can operate in high winds, sand, rain, snow and fog, and for short periods of exposure to salt mist, acid rain and sandstorms.

▶ Transport capacity

- ▶ The car body is 3,360mm wide, and internal space is fully used to maximize capacity;
- ▶ The train features a seat arrangement of 2+2 or 2+3, providing a seating capacity of 556 passengers;
- ▶ The train is fitted with business class seats, first class seats and second class seats, in order to meet both capacity requirements, as well as passenger demand.

▶ Safety and reliability

- ▶ The EMU uses a grading energy absorption concept, and the passive safety design meets the full working condition requirements of EN15227 standard;
- ▶ An earthquake early warning system and a train tracking early warning system (TCAS) improve active safety performance of the EMU;
- ▶ All materials, structures etc of the EMU are designed to comply with international standard requirements;
- ▶ Safety and reliability are improved through the use of a fault-safety design principle and redundancy control mode of hard wire + network.

▶ Enhanced passenger comfort

- ▶ Spacious and bright interior environment ;
- ▶ Entertainment and living facilities are well appointed;
- ▶ High air impermeability , and airtight carrying capacity of ±6,000Pa;
- ▶ Small pressure fluctuation inside the vehicle , the maximum pressure change within 1s is no larger than 250Pa;
- ▶ Low noise and low vibration inside compartments: noise in the middle of a compartment < 68 dB(A);
- ▶ Stable and comfortable operation , comfort level index ≤2.0 and operation stability index ≤2.5;
- ▶ Large air-conditioning capacity provides sufficient fresh air : the fresh air volume in each passenger compartment is 10~20m³/(h-person); fresh air volume in driver's cab is 30m³/(h-person).

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Address: No.16 West 4th-Ring Mid Road, Haidian District, Beijing
 Zip Code: 100036
 English-Tel: +86 10 51897295
 Deutsch-Tel: +86 10 51897284
 Русский-Tel: +86 10 51897300
 E-mail: gjjy@crrecg.cc
 Fax: +86 10 52608280
 http://www.crrecg.cc/

OVERVIEW

CRRC has developed a 350km/h high speed train through independent R&D. The EMU is a standardized and modular new generation high speed train whose intellectual property rights are based on scientific research and development carried out by CRRC specifically around the concepts of safety, reliability, stability, riding comfort, energy efficiency, sustainability credentials and commercial value. The train can be developed into a range of products to suit our clients' diverse requirements.



350KM/H HIGH SPEED TRAIN

An icon of China's modern high speed rail network



ENERGY CONSERVATION AND ENVIRONMENTAL PROTECTION

- ▶ A vacuum dejection collection system is used to achieve zero discharge of wastewater and dirt;
- ▶ Low wheeltrack impact, low levels of abrasion, low vibration and low external noise;
- ▶ Energy consumption per capita is low. Energy consumption per capita over 100-kilometer at a speed of 350km/h is $\leq 4\text{kwh}$
- ▶ Structures like car body, bogie and inside components use a lightweight design, thus reducing the overall weight of the vehicle;
- ▶ The head of the vehicle has been optimized to improve aerodynamic performance. Running resistance at a speed of 350 km/h is low at 64kN;
- ▶ In order to lower the heating power, both materials and structure feature heat-insulating properties are used. Power utilization equipment achieves automatic control to reduce power consumption;
- ▶ Regenerative braking is maximized (with energy fed back to the power grid), and wear of basic brake pads is reduced .

INTELLIGENT CONTROL SYSTEM

- ▶ Fail-safe features include 2526 monitoring points, which are arranged throughout the vehicle, and automatic vehicle control can be used if the EMU breaks down
- ▶ The network system uses dual redundancy design of TCN and high-speed transmission Ethernet, control and fault diagnosis of all subsystems are available, and overhaul and maintenance are rendered more efficient. Diagnostic and operating data is wirelessly transmitted to a ground server to facilitate remote diagnosis and monitoring.

INTEROPERABILITY

- ▶ Our design allows for the interoperability of EMUs. Trains of the same speed grade produced by different manufacturers can be coupled and mutually rescued. This improves operational safety, and gives train operators greater flexibility.

LIFECYCLE

- ▶ Designed for a lifespan of 30 years;
- ▶ The number of operational days ≥ 340 days per year;
- ▶ Annual mean running mileage is no lower than 800,000 kilometers.



MAIN PERFORMANCE PARAMETERS

Gauge	1435mm
Platform height	1,250mm
Distance to track center line	1,750mm
Distance between centers of tracks	5m
Curve radius	2,200 m
Maximum slope	20‰
Power supply mode	25kV/50Hz
Running speed	350km/h
Test speed	385km/h
Formation type	8-car formation 4M4T
Transmission	AC-DC-AC
Axle load	17t
Seating capacity	556 passengers
Formation length	$\approx 209\text{m}$
Bogie center distance	17,800mm
Bogie wheel base	2,500mm
Wheel diameter	920mm
Width of car body	3,360mm
The cut-through width of side door	800mm (900mm vehicle for the disabled)
Acceleration capacity	No lower than 0.43m/s^2 ($0 \rightarrow 200\text{km/h}$ average acceleration), and capable of meeting the requirement of being no lower than 0.4m/s^2 ; No lower than 0.07m/s^2 (350km/h residual acceleration), and capable of meeting the requirement of being no lower than 0.05m/s^2 ;
Deceleration capacity (Emergency braking EB, composite working condition)	Maximum emergency braking distance is 5100m at the initial speed of 350km/h, and the requirement of being $\leq 6500\text{m}$ can be met; Maximum emergency braking distance is 3,300m at the initial speed of 300km/h, and the requirement of being $\leq 3,800\text{m}$ can be met.
Height of car body	4,050mm
Height of passenger compartment	2,260mm
Height from the floor to the rail surface	1,260mm

USER EXPERIENCE

INTERIOR DECORATION

- ▶ The driver operation interface is concise in its design. Human-machine interaction has been fully considered, and the EMU provides drivers with a safe, efficient and comfortable working environment;
- ▶ The inside of passenger compartments is spacious, light and cleverly configured. The interiors provide a comfortable environment equally well suited to medium as to long distance journeys;
- ▶ Designated business class compartments have been designed with the needs of business class passengers in mind, with all-leather seats and an elegant and comfortable interior that allows passengers to rest and recharge.

LIFESTYLE FACILITIES

- ▶ Additional lifestyle facilities are provided to meet specific passenger demands, such as a designated dining area;
- ▶ A spacious area provides a bright environment for passenger dining.

ENTERTAINMENT

- ▶ A vehicle-mounted video system allows passengers to enjoy video programs and listen to FM broadcast.

CONNECTIVITY

- ▶ WIFI internet access is provided throughout all cars, allowing passengers to surf the internet at any time. Fast and reliable internet access is equally well suited to the demands of business travellers using their journey to work, as to leisure passengers looking for entertainment.

EMU MAINTENANCE

- ▶ Each component of the vehicle is modular and interchangeable. This allows for fast and convenient dismantling and maintenance.
- ▶ Dual redundancy design of TCN and Ethernet is used, train control and fault diagnosis of all subsystems is available, and overhaul and maintenance is made easier.
- ▶ Diagnostic data and operating data can be downloaded remotely, equipment can be monitored online, and overhaul and maintenance personnel can be assisted in eliminating and processing faults quickly.



SUSTAINABLE DEVELOPMENT

- ▶ A large number of recoverable materials are used to allow materials to be recycled.
- ▶ Advanced materials and advanced production technology processes are used to save resources.
- ▶ Electric drive achieves zero emissions, regenerative braking is fully utilized, and wear of basic brake pads is lowered.



CURRENT MARKET APPLICATIONS

At present, standardized EMU has been operating and examined for one year, accumulative operation and examination mileage is 900,000 kilometers, excellent operating quality is exhibited, and estimation gives that the EMU will become the main force for domestic high speed rail operation and going to the world in the future.

