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Signal transmission links for the electron cyclotron resonance heating system on J-TEXT

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Electron Cyclotron Resonance Heating (ECRH) system is an important auxiliary heating method which is wildly used in magnetic confinement fusion. For the ECRH system on J-TEXT, signals should be transmitted to the control system for monitoring and protection, and also to the data acquisition system. Considering the high voltage and harsh Electro Magnetic Interference (EMI) environment, reliable fiber optic transmission links are applied. Transmitted by fiber-optic modules, the response time of digital signals can be less than 1μs. According to the ECRH system requirements, two practical analog fiber optic transmission links have been designed and developed. Using AD650, the delay time of most analog signals is less than 100μs. Based on the Voltage-to-Frequency (V/F) and Frequency-to-Voltage (F/V) conversion technology with VFC110, critical signal transmission delay can be shortened to 5μs. The test results indicate that the designed signal transmission links for ECRH system on J-TEXT are stable and reliable.

Keywords: ECRH, Fiber optical link, Signal conditioning

Eligible for student paper award?

No

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