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The Design on Pulse Distributor and Its On-line Status Diagnosis for ITER PF Power Supply

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The International Thermonuclear Experimental Reactor (ITER) Poloidal Field (PF) power supply is consisted by thyristor-based phase-controlled converters to supply megawatt power for six PF coils. Each bridge arm of ITER PF converter is paralleled with 12 thyristors to withstand 27.5 kA rated current. For avoiding the electromagnetic interference, the trigger signals are transmitted by optical fiber from the pulse generator. The pulse distributor is designed in this paper to transfer the optical signal to high current electrical trigger pulses with less than 2 us rising time, thereby triggering the paralleled thyristors reliably and isolating 20 kV voltage from converter to controller. In addition, the pulse distributor on-line status diagnosis is also the key function. The signals of crucial on-line status will be encoded and transmitted by optical fiber to controller thus guaranteeing the safe operation of ITER PF converter system. The pulse distributor has been experimented in ITER PF ac/dc converter for two years and all functions have been effectively verified.

Eligible for student paper award?

Yes

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