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Program Design of Timing Signal Detection and Protection for CSNS/RCS Resonant Power Supply

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In order to ensure strict phase synchronization between power supplies, CSNSRCS resonant power supply receives 25Hz and 100KHz timing signals provided by the timing system. The 25Hz rising edge is used as the trigger signal of RCS cycle, and the 100KHz signal is the AD sampling clock of the power digital controller. These two signals are distributed by the timing system according to the clock demand of the whole accelerator. During the operation of CSNS, the thunder in the park caused the loss of the main timing of the timing system, and the RCS power supply reported various strange failures irregularly, resulting in the beam stop of the accelerator and damage to the power hardware. In this paper, the power supply action logic when timing loss occurs is studied in detail, and a timing signal loss detection method is proposed. The correctness of the program design is verified through programming and testing. At present, the timing signal detection subprogram has been added to the formal program, and it runs well.

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Footnotes

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Yes

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