

二进制 BCH 编译码的 DSP 实现

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摘要: 针对 DSP 硬件之间的无线通信, 提出了一种基于 DSP 的二进制 BCH (15, 7) 编译码器. 设计采用 TI 公司的 32 位浮点高性能 DSP 处理器, 通过 CCS 软件平台, 分别编写了相应的编码、译码及纠错程序. 文中介绍了二进制 BCH (15,7) 码及其纠错码的算法, 并且给出了相应的 C 语言程序. 通过 DSP 与 PC 之间的串口通信, 验证了 BCH 编译码和纠错功能. 当 DSP 接收数据出现小于等于两位随机错误时, 可以发现错误并给与纠正. 同 FPGA 相比, 在保证数据传输的准确性的同时, 降低了硬件成本, 简化了算法实现难度.

关键词: DSP; BCH 码; 纠错; 编译码

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DSP Implementation of Binary BCH Encoding and Decoding

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Abstract: Aiming at the wireless communication between DSP hardware, a binary BCH (15,7) codec based on DSP is proposed. Designed by TI's 32-bit floating point high-performance DSP processor, through the CCS software platform, respectively, prepared the corresponding coding, decoding and error correction procedures. In this paper, the algorithm of binary BCH (15,7) code and its error correction code is introduced, and the corresponding C language program is given. Through the serial communication between DSP and PC, BCH coding and decoding and error correction function are verified. When the DSP receive data is less than or equal to two random errors, you can find the error and give correction. Compared with the FPGA, while ensuring the accuracy of data transmission at the same time, reducing the cost of hardware, simplifying the difficulty of the algorithm.

Key words: DSP; BCH codec; error correction; encoding and decoding

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