

用于移动支付的自适应曼彻斯特解码器设计

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摘要: 限制距离通信中进行差分曼彻斯特解码时, 由于 RC 振荡器产生的时钟有较大的偏差, 导致误码率升高. 本文提出的解码电路首先对解码信号进行滑动平均滤波, 去除信号毛刺; 在数据变换电路中, 将信号方波变换成三角波. 针对变换后的三角波, 采用自适应的方法设置高电平门限和低电平门限, 用来判断采样后的高低电平, 同时通过判断三角波的波峰和波谷恢复出时钟和中间数据, 进行差分曼彻斯特解码. 实验表明, 本文电路能在时钟偏移正负 30% 条件下稳定解码, 且电路结构简单, 实现成本较低.

关键词: 限制距离通信; 曼彻斯特码; 差分曼彻斯特解码; 时钟偏移

An Adaptive Manchester Decoder Design for Mobile Payment

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Abstract: Differential Manchester encoding is used for range controlled communication. The deviation of the RC oscillator for decoding clock will lead to a higher decoding error rate. In this paper, the decoding signal is first filtered by the moving average filter to remove the glitches. In the data transform circuit, the square waves are transformed into triangular waves. On the triangular waves, the adaptive method is used to set high or low threshold levels, which decide the level of sampling signal. At the same time, the peak and the trough of the triangular wave are pointed to recovery clock and data, which are used for differential Manchester decoding. The experimental result demonstrate that this circuit is easily to implement and can decode differential Manchester code stably under the plus or minus 30% clock skew conditions at a reasonable cost.

Key words: range controlled communication; manchester code; differential manchester decode; clock skew

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