

Development of a Data Transmission Method using a Hybrid Signal Generated by Analog and Digital Signals

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The IC card is widely used in various public systems such as in credit cards, electronic wallet systems, and card locking systems. Therefore, an integrated card (multifunction card) adapted to various utilization scenarios has been developed. The numerically functionalized device requires a large data capacity and large-volume data communication. Enhancement of the numerical functionalization may lead to an increase in the data transmission time, inconveniencing users in the near future. In this paper, we propose a data transmission method using both analog and digital signals. This method utilizes a synthesis signal called a Hybrid-signal generated electrically from an analog and digital signal, using a signal addition circuit. We have developed a prototype system using the Hybrid-signal and performed data communication experiments. The experimental results of the prototype system suggest that the Hybrid-signal can simultaneously transmit both analog and digital information.

Key Words : IC card, Hybrid-signal, synthesizing information, analog waveform, digital signal